Semantic Sequencing in Foreign Language Vocabulary Learning: Implications for Language Teaching

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Abstract

Despite the renewed interest vocabulary is currently enjoying, consensus is lacking about the most appropriate method by which new vocabulary items should be sequenced for L2 learning. There is substantial disagreement between L2 writers with regard to presenting new L2 vocabulary items in semantic sets. One group of writers asserts that vocabulary items should be sequenced according to meaning similarity; an alternative view is that textbook writers and teachers should definitely avoid presenting *semantically related* lexical items together as this might actually hinder rather than enhance learning due to the interference phenomenon. According to this latter perspective, it is suggested that new lexical items should be sequenced either according to their frequency, and thus raising the possibility of presenting completely *unrelated* items together, or that they should be sequenced with other items that relate to each other in a kind of story line and are, thus likely to share *thematic* ties. Much of the relevant literature in this area is speculative rather than empirically supported.

This thesis presents an empirical study comprising two experiments that were conducted with Egyptian EFL students to examine the position held by the interference theory regarding the negative effects on learning when semantically related words are taught together, and to compare the effects of different methods of sequencing new L2 vocabulary items (i.e. semantic, thematic, and unrelated) on short- and long- term retention. In addition, qualitative interview data was collected from Egyptian EFL teachers and students to explore their perceptions in regard to the alternative approaches of vocabulary sequencing. The thesis also presents a lexical analysis of the ELT textbooks used in Egypt regarding the methods employed for vocabulary sequencing.

The findings of the two experiments suggest that sequencing new L2 vocabulary items according to meaning similarity has a detrimental effect on learning, and that new lexical items are best retained when they are presented in thematic sets.

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Author's declaration

I declare that work in this dissertation was carried out in accordance with the Regulations of the University of Bristol. The work is original except where indicated by special reference in the text and no part of the dissertation has been submitted for any other degree. The dissertation has not been presented to any other University for examination either in the United Kingdom or overseas.

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Table of Contents

List of Tables

List of Figures

Chapter One: Introduction

1.1 Overview

This research explores the effects of presenting new words in semantic sets on second language (L2) vocabulary learning and retention, in addition to investigating the most appropriate approaches by which new vocabulary items might be sequenced to L2 learners. In this chapter, I explain my motivation for conducting this research. Secondly, I highlight the role of vocabulary on second language acquisition (SLA), which in turn justifies the emphasis that should be given by researchers to different lexical issues. Thirdly, I set out the aims and objectives of this research. Finally, I outline the structure of this thesis.

1.2 Motivations for this Research

My motivation for this research originated from my personal experience as a teacher of students learning English as a foreign language (EFL) in Egypt and as a L2 learner myself; and from my observation of lack of consensus in the teaching methodology literature over the issue of presenting new L2 words that are similar in their meanings at the same time to L2 learners, which is mainly due to lack of research in the area of vocabulary sequencing.

1.2.1 Personal Experiences

During my years of teaching, I noticed that semantic confusion, i.e. confusing the meanings of words sharing meaning similarity was a common phenomenon among my students. They had an obvious difficulty in getting the words right while speaking. After struggling and hesitating for a while, I noticed that students frequently substituted the intended word with another word that is similar in meaning to the target word. For example, I recall an incident when a student wanted to refer to a *string* used to hang a picture. After hesitation, he used the word *thread* then *rope*, but he still seemed to be struggling to find the right word. As soon as I said the first two letters of the word *string* to help him, he completed it immediately and continued his sentence.

As a L2 learner myself I often find difficulty while speaking and writing in English to find the word that I actually want to use. Words of similar meanings to the intended

word pop into my mind. However, I am able to identify that this is not the right word to be used in a certain situation. While writing, I usually have the time I need to recall the appropriate, intended word. The problem occurs when I am having a conversation with someone, as I do not have the time to try to recall the correct word. I therefore usually use the word that first comes to my mind which is similar in meaning to this word, but it may not be the right word to be used in that specific situation.

Such incidents happening to my students or myself have made me question the reasons behind the phenomenon of semantic confusion, and thus I turned to the relevant literature to explore the reasons behind it.

1.2.2 Lack of Consensus in Literature

While surveying the relevant research in the literature, I came across two opposing positions. The first represents the belief that teaching words in semantic sets helps the students to differentiate the meanings of these words and learn them better. By contrast the second position is of the opposite view, that teaching words in semantic sets actually hinders rather than helps the learning of these words as a result of the interference effects. I noticed that both positions had little evidence to support their argument and that both views seemed to be based on speculation rather than empirical research.

1.3 The Role of Vocabulary in Second Language Acquisition

The relative neglect of studies of vocabulary acquisition in general has often been commented on within the field of applied linguistics (Richards, 1976; Meara, 1980; Gass and Selinker, 1994). This neglect was due in large measure to an over concentration on syntax and morphology, as they were held to be central to language acquisition. However, since the mid-1980s there has been a renewed interest in the role of vocabulary on second language learning reflecting the importance always accorded to it by learners (Visser, 1990; Carter, 1991; Modria and Wit De Boer, 1991; Bahns, 1993; Gu and Jhonson, 1996; Paribakht and Wesche, 1997; Read and Chapelle, 2001). An increasing number of publications on vocabulary have appeared. There have been publications of several lexical reference works, for example, *The Longman Lexicon* (McArthur, 1981) which lists items according to their semantic fields. A number of handbooks for teachers devoted entirely to the teaching of

vocabulary have been published (e.g. Wallace, 1982; Allen, 1983; Gairns and Redman, 1986), as well as some vocabulary textbooks for ESL students (e.g. Rudzka *et al.*, 1981, 1985; McCarthy and O'Dell, 1994). Several anthologies of vocabulary-based research have been published (e.g. Carter and McCarthy, 1988; Arnaud and Bejoint, 1992; Schmitt and McCarthy, 1997; Coady and Huckin, 1997). Numerous articles have appeared in applied linguistics journals, which are devoted to research on second language vocabulary acquisition (e.g. Crow and Quigley, 1985; Zhang, 1995; Meara *et al.*, 1997; Qian, 1999; Morin and Goebel, 2001).

The growing interest in vocabulary acquisition is probably due to the realisation that vocabulary is central to any language acquisition process and that a solid vocabulary is necessary at every stage of language learning (Allen, 1983; Nation, 1990; Nunan, 1991; Vermeer, 1992; Gass and Selinker, 1994; Harley, 1995; Lawson and Hogben, 1996; Laufer, 1997). Vocabulary knowledge is considered by researchers to be of great significance in language competence as it is an important key to comprehending and producing any written or spoken language. Vocabulary units are described to be the core of communication (Hatch, 1983). No amount of grammar or other type of linguistic knowledge can be employed in communicative discourse without the mediation of vocabulary. As McCarthy (1990: 1) puts it:

> "No matter how well students learn grammar, no matter how successfully the sounds of L2 are mastered, without words to express a wider range of meanings, communication in a L2 just cannot happen in any meaningful way".

Laufer (1986: 72) argues that if fluency is understood as the ability to convey a message with ease and comprehensibility, then vocabulary adequacy and accuracy matter more than grammatical correctness. There are numerous other reasons for emphasising the importance of vocabulary in second language acquisition. Research has consistently found a strong correlation between vocabulary knowledge and reading comprehension (Anderson and Freebody, 1981; Nation and Coady, 1988). Vocabulary also correlates highly with writing quality (Astica, 1993), speech production (Levelt, 1989), listening comprehension (Marslen-Wilson *et al.*, 1994), and with general language proficiency scores (Laufer, and Shmueli, 1997). This has led to the conclusion that lexical knowledge is also crucially implicated in educational success (Krashen and Terrell, 1983; Harley, 1995).

An additional reason for the increasing interest in lexical issues is that it has been found that vocabulary presents a serious obstacle to many L2 learners (Johnasson, 1978; Politzer, 1978; Meara, 1978; Cornu, 1982; Faerch and Kasper, 1983; Laufer, 1986; Santo, 1988; Beaton *et al.*, 1995; Stoffer, 1995; Zimmerman, 1997). Vocabulary as seen from the second language learners' perspective, has been acknowledged as their "greatest single source of problems" (Meara, 1980: 221). In Meara's (1984) study of L2 university students, lexical errors outnumbered grammatical errors by 3:1 or 4:1. A survey of L2 students taking university courses found that they identified vocabulary as a major factor that held them back in academic writing tasks (Leki and Corson, 1994). Similarly, Kelly (1991) demonstrated that lexical ignorance is the main obstacle to listening comprehension with advanced foreign language learners. Moreover, not only do vocabulary errors seem to be the most serious ones for students, but the most disruptive ones for native speakers in terms of interpretation. As Gass (1988) observes, grammatical errors generally result in understandable structures, whereas lexical errors are potentially more misleading and thus may interfere with communication.

As a consequence (for reasons presented above), there is a growing acceptance of the view that vocabulary is not of secondary importance for successful second language learning, which has resulted in the "virtual explosion of vocabulary studies" (Schmitt, 1998:281). These studies have taken many different paths, exploring the most efficient ways of presenting words (Johnson and Pearson, 1984), factors affecting words learnability (Ellis, 1994; Laufer, 1997), implicit versus explicit vocabulary learning (Hulstijn, 1992; Dupay and Krashen, 1993), the interrelationship of reading and word learning (Anderson and Freebody, 1981), strategies employed by learners in vocabulary acquisition (Cohen, 1990; Brown and Perry, 1991; Schmitt, 1997), the size of lexicons (Goulden *et al.*, 1990) and vocabulary learning assessment (Read, 1997; Laufer and Nation, 1999).

A lack of progress, however, remains in addressing some basic questions. One question concerns the method by which the lexical content within L2 learning materials should be sequenced. It is important that such a question be answered, since it has been acknowledged that the order by which language material is sequenced affects its learnability (Rowntree, 1981; Nation, 1982; Els *et al.*, 1984; Gibbons,

1993). Higa (1972) notes that the interaction within a group of words to be learned at the same time is an essential factor in determining the difficulty of the words to be learned, and that success in teaching a foreign language is partly a function of how learning materials are presented and organised to the learners. Despite the increasing number of empirical studies, however, relatively little attention has been given to the alternative methods of sequencing new vocabulary for L2 learners.

1.4 Aims and Objectives of the Research

As a result of the lack of research with regard to different methods of vocabulary sequencing, consensus is lacking over the issue of word presentation in semantic sets. Only few empirical studies, with major limitations, have been conducted to investigate this issue. The research reported in this thesis attempts to make some progress in this area by examining the presentation of new words in semantic sets within the context of an empirical study. The research also aims to compare the effects of different methods of sequencing new L2 vocabulary items on short-and long-term retention (see 5.5.1 and 5.6.1 for the specific questions which guided this research). Further, as the experiments within the research were conducted with Egyptian students, the research aims to investigate the methods by which new vocabulary items are sequenced in the English language teaching (ELT) textbooks used in Egypt in the three phases of the education system. Moreover, it aims to explore the attitudes of Egyptian EFL teachers and students with regard to the alternative approaches to vocabulary sequencing.

1.5 Structure of the Thesis

The thesis is divided into eight chapters. In this chapter, I have presented my motivations for conducting this research, emphasised the importance of the role of vocabulary in second language acquisition, and demonstrated the aims and objectives of the research. In Chapter Two I present the assumptions of the group of L2 writers and researchers recommending the semantic approach to vocabulary sequencing, and critically review the evidence frequently referred to in support of their assumptions. Chapter Three presents the assumptions of the group of L2 writers and researchers who argue against the semantic approach to vocabulary sequencing, and critically reviews the evidence frequently referred to in support of their assumptions, with a focus on research findings with respect to L2 interference. In Chapter Four, I present

a number of EFL textbooks adopting different approaches to L2 learning from a lexical point of view to examine the methods by which new L2 lexical items are often sequenced in each of them. In Chapter Five, I outline the design of the first experiment in the empirical study conducted within this research. I also describe the procedures for the quantitative data analysis in the experiment and results of the analysis, in addition to the findings from the students' interviews. Chapter Six presents the design of the second experiment in the empirical study, in addition to the statistical analysis and results for the experiment. In Chapter Seven, I investigate the ways by which vocabulary is sequenced in ELT textbooks in the three stages of education in Egyptian schools, in addition to exploring the perceptions and experiences of EFL Egyptian teachers with regard to sequencing vocabulary according to meaning similarity. In Chapter Eight, I discuss my research findings, strengths, limitations and highlight implications for further research and classroom teaching and learning practices.

Before proceeding to these chapters, a word of clarification is needed regarding sequencing vocabulary items according to meaning similarity. The research in this thesis is concerned with a learner's encounter with new L2 vocabulary items for the first time. The reason I am raising this issue is that there is general agreement among L2 writers and researchers in the literature of vocabulary learning that relating new words to semantically related words that students already know result in positive gains. The principle of incorporating new knowledge into old is widely accepted as a basic requirement of learning (Gipe, 1979; Coady, 1993; Schmitt and Schmitt, 1995; Johnson and Steel, 1996; Baddley, 1997; Crutcher, 1998). It has been acknowledged that old-established words are part of a rich network and that if new words can be integrated into this network, those associations can facilitate their recall. Conversely, a word which has not yet been integrated will have only its individual features to aid in its retrieval. According to the knowledge and access hypothesis rooted in the schema theory outlined by Hague (1987:219), new words are best learned in semantically related groups that are somehow related to words that the learner already knows. Moreover, in psychology, it is assumed that in general the learner finds learning material difficult to learn if it has no relation, association, or similarity to any of the materials he has already learned (Higa, 1972: 296).

Several writers (Lindstromberg, 1985; Schwartz and Raphael, 1985; Marzano and Marzano, 1988; Nagy and Scott, 1990; Seal, 1991; Antonacci, 1991; Shmitt and McCarthy, 1997) have emphasised the importance of developing the meaning of a word by establishing the relationships and associations between this word and other words. It is believed that promoting the formation of associations and building up students' semantic networks promotes deep levels of encoding and, thus, is effective for long-term retention. Even Nation (2000a) who argues against presenting the L2 learner with new words sharing meaning similarity asserts that once semantically related items have been reasonably established, there is good value in deliberately bringing the items together to see how they differ from each other and identify where the boundaries between them lie. Several empirical studies have been conducted to investigate the effects of relating new words to the ones that the students already know which share meaning similarity with these words (e.g. Johnson and Pearson, 1984; Karbon, 1984; Eads and Cockrum, 1985). It has been found that prior knowledge-based strategies such as semantic mapping and semantic feature analysis are effective strategies of teaching vocabulary as they relate new words to those the students already know. Therefore, it is important to emphasise that the research in this thesis focuses on the interaction within a group of semantically related words that are all completely new to the learner.

1.6 Summary

This chapter has explained the various motivations for conducting this research, in addition to highlighting the importance of the role of vocabulary in L2 acquisition, and outlining the aims and objectives of the research. The following two chapters analyse the relevant literature in relation to the semantic approach to vocabulary sequencing.

Chapter Two

The Semantic Approach to Vocabulary Sequencing

2.1 Overview

Several L2 writers and researchers (e.g. Channel, 1981, 1990) recommend sequencing new L2 words to learners in semantic sets to promote effective vocabulary learning. A good deal of language teaching material is based on the assumption that the mental lexicon is organised into semantic fields, and that such organisation facilitates retention and recall. Such an account of the semantic organisation of the mental lexicon is claimed to be supported by the semantic field theory (Mansouri, 1985), which in turn, is supported by findings from psycholinguistic studies ranging from word association experiments with first language (L1) learners (e.g. Deese 1964), to lexical recall studies (e.g. Bousfield, 1953; Bower *et al.*, 1969), and to lexical substitution errors studies (e.g. Garret, 1992).

In this chapter, I identify the justifications given by the advocates of the semantic approach to vocabulary sequencing for recommending that learners should be presented with new lexical items in semantic sets. Further, I present the assumptions of the semantic field theory, its evaluation as a linguistic theory and the criticisms that might be directed against applying the theory to the pedagogical context. The proponents of the semantic approach to vocabulary sequencing frequently refer to the findings of L1 psycholinguistic studies that shed light on how vocabulary is organised in the mental lexicon. I will, therefore, review the findings from these studies, and then examine how far these research findings can be applied to L2 vocabulary learning. Finally, I demonstrate that the semantic approach to vocabulary sequencing is widely adopted in EFL learning contexts.

2.2 The Semantic Approach to Vocabulary Sequencing

Several SLA researchers and writers endorse a methodology of presenting new L2 vocabulary to learners in semantically related sets as being the most effective. The following quotations illustrate this view:

(1) "...one principle we can follow is to teach words in related sets. If we present vocabulary as unconnected, isolated units, ... our students are actually missing some

of the associations that normal speakers of the language enjoy. If we teach words in unrelated groups, we are, in fact, teaching only a part of their meaning. Obviously, if we want our students to use the language well, we must ensure that we teach individual word meanings much more completely. This requires us to teach related words together." (Moody, 1982:612)

(2) "Whenever possible, the vocabulary items should be centred about one topic. Words about food should be given in one lesson; words about clothing in another; words about weather in still another; and so on."(Finocchiaro, 1986: 108)

(3) "In language learning and teaching, sense relations are of paramount importance. In the classroom, grouping items together by synonymy, hyponymy, antonymy and other types of relations will help to give coherence to the lesson. As means of presentation and testing, these relationships are extremely valuable, and can provide a useful framework for the learner to understand semantic boundaries: to see where meaning overlaps and learn the limits of use of an item." (Gairns and Redman, 1986: 31-32)

(4) "We should make more effective use of sense relations between the lexical items of a language... It apparently does not take more energy and concentration to learn the pair *big/small* than to learn the word *big*. When learned as a set, both words are much easier to retrieve from the memory." (Neuner, 1992: 161-162)

From these perspectives and from many others that can frequently be found throughout the literature, several motivations for recommending a semantic approach to vocabulary sequencing are identified in the following sub-sections.

2.2.1 Accuracy and Specificity

It is argued that the semantic approach to vocabulary sequencing is likely to result in positive gains in students' accuracy (Gairns and Redman, 1986). This can be achieved by dissecting the meaning of lexical items sharing meaning similarity, looking into the full semantic information to detect what makes them similar or different from each other, and accordingly determining and identifying appropriate collocations, contextual limitations, and possible figurative uses (Jullian, 2000). For example, presenting the words *handsome* and *beautiful* together to the learners helps them to realise that *handsome* tends to be used with men, while *beautiful* usually goes with women. In this sense, learners will have sufficient information about words presented in a semantic set to enable them to use words appropriately and normally in a number of different contexts.

Moreover, it is claimed that the semantic approach to vocabulary sequencing offers the learners an opportunity to approach new terms which represent an alternative to the general or core terms they already use, i.e. the simplest and most frequent words in any language with a wide scope of application. It has been observed that that L2 learners often use the terms of generalised meanings where terms of more specific meaning are appropriate (Kellerman, 1997; Blum and Levenston, 1978; Harley, 1982). This has been evidenced by a number of research studies. For example, Levenston and Blum (1977) (cited in Ijaz, 1986) in a study of the lexical usage of advanced adult L2 learners of Hebrew, found that, compared to native (L1) speakers, the L2 learner used more words of general rather than specific meaning, that they tended to generalise inappropriately, and failed to respond to constraints of register and collocation. Similarly, Harley (1982) who compared the verb usage of French immersion students with that of native French speakers, found that many errors produced by the immersion students derived from the overuse of verbs with general meanings. Some writers (e.g. Channell, 1981; Jullian, 2000) note that when learners overuse these core or general terms, it makes their discourse sound poor and childish, especially in adult learners. Moreover, they assert that this leads to the learners' failure to express the variety of ideas they want to communicate, and to precisely communicate the intended message. For example, words like *nice* are often overused by learners instead of alternatives such as *friendly*, *lovely*, *delicious*, or *pleasing*; similarly *good* is frequently used to describe a person, when learners may really mean to say *benevolent*, *upright*, *kind*, *tender*, *understanding*. In this sense, the semantic approach to vocabulary sequencing is seen by some writers (e.g. Cornu, 1979; Gairns and Redman, 1986) as a solution to the problem of helping L2 learners to use accurate lexical items while communicating on the grounds that presenting words in semantic sets will help the students to appreciate lexical precision (see quotes 1 and 3).

2.2.2 L1 and L2 Semantic Boundaries

Another factor motivating the recommendation of sequencing semantically related words together is the fact that the patterns of associations and semantic boundaries vary between languages. In other words, the sets of semantically related words in one language rarely map the equivalent sets in another language (Nelsen, 1976; Miller and Johnson-Laird, 1976; Meara, 1978; Cornu, 1979; Ijas, 1986; Aitchison, 1993). Therefore, it is argued that in order for L2 learners to obtain the same kind of

association pattern of native speakers, words sharing similar semantic features will need to be presented and learned together. Mansouri (1985) asserts that this is particularly important with learners whose mother tongue differs sharply from the second language on the lexical level, as in the case with Arabic-speaking learners of English. Arabic and English show marked differences in dividing up aspects of external reality or experience. An example given by Mansouri is that what English denotes by the three lexical items *stare*, *gaze*, and *glare*, Arabic refers to by using only one lexical item /juhadiq/ (lit. = "look for a long time"). Mansouri also notes that Arabic-speaking learners of English will find considerable difficulty in acquiring the precise meaning of these items unless they are made aware of the similarities and differences between the meanings of such items and their collocational properties.

2.2.3 Semantic Peculiarity

A third argument common within pedagogic research supporting the semantic approach to vocabulary sequencing is that presenting learners with words sharing meaning similarity at the same time enables the learners to recognise the semantic peculiarity of words within a language that makes each word unique. The fact that words hardly ever share all semantic features is emphasised by many writers (e.g. Marzano and Marzano, 1985; Ooi and Kim-Seoh, 1996). In practice, very few words in any language are interchangeable in all contexts. An example given by Macaulay (1976) is the semantic set comprising the items *chat*, *talk*, *discuss*, and *debate* which reflects a scale of increasing formality or seriousness with which the activity is pursued. Therefore, it is argued that it can not be presumed that learners will be aware of the uniqueness of a certain word unless it is taught with other similar words.

2.2.4 Difficulty in Using Semantically Related Terms

A fourth reason for advocating the semantic approach to vocabulary sequencing is that it has been illustrated on several occasions that second language learners appear to experience particular difficulty with the use of terms that are closely related (Abberton, 1968; Duskova, 1970; Mugeon *et al.*, 1979; Harley, 1982; Ijaz, 1986). An example given by Connolly (1973) is choosing to use a word from the set of words which all have the meaning of moving objects from one place to another: *shove*, *drag*, *fling*, *shift*, *heave*, *pitch*, *push*, *jerk*, *hurl*, *haul*, *toss*, *tow*, and *pull*. This might have led to the assertion of several writers (e.g. Hunter, 1969; Nelsen, 1976; Seal, 1991)

that when words are learned in semantic sets, the learning of one item can reinforce the learning of another, as well as facilitate understanding because items that are similar in meaning can be differentiated. It has been illustrated frequently throughout the literature (e.g. Gairns and Redman, 1986) that teaching vocabulary items in semantic sets might help in drawing the learners' attention to conceptual differences as well as differences in use, which in turn makes learners more discriminating of word meaning and word use.

2.2.5 Clarifying the Meaning of Words

Clarification of the meaning of words is a fifth reason given by the advocates of the semantic approach to vocabulary sequencing. Many writers throughout the literature claim that vocabulary items cannot be defined independently of other items that are semantically related to them (Corder, 1973; Carter, 1987; Wierzbicka, 1992; Lyons, 1995). Examples given by Yule (1996) are the meaning of the word *conceal* can be described as being the same as *hide*, *daffodil* can be explained as a kind of *flower*, and *shallow* as the opposite of *deep*. Gairns and Redman (1986) assert that to understand a word fully, the learner must know not only what it refers to, but also where the boundaries are that separate it from words of related meanings (see quote 3, p.19). They also note that if semantically related items are learned in isolation, they could be confused later with each other. As long as word meanings grow out of the relations that a word enters into with another, it has been suggested that semantically related words should be taught together.

2.2.6 Materials Organisation

A sixth aspect that can be identified in pedagogical research in support to semantic sequencing of vocabulary items is the fact that the semantic approach to vocabulary sequencing generally involves the arrangement of the learning material into organised categories or groups (Feuge, 1976). For example, the words: *fruit*, *apple*, *orange*, *banana*, and *grapes* can be organised in a taxonomy. Psychologists (Kintsch, 1970; Thompson, 1972; Howard, 1987; Baddley, 1999) assert that organised material is easy to learn and recall. Therefore, it is argued that presenting L2 learners with words sharing semantic ties in an organised manner by using maps, graphs, grids, or scales facilitates the learning and retention of these words.

2.2.7 Relevance to Linguistic Theories and Psycholinguistic Research

Finally, some applied linguists (e.g. Channell, 1981) have illustrated that what actually gives the semantic approach to vocabulary sequencing its strength is that it takes account of relevant aspects of linguistic theories, namely, the semantic field theory, and the findings from psycholinguistic studies indicating that vocabulary is organised in the mental lexicon according to meaning similarity. Thus, in the following sections, I am going to look at the semantic field theory (2.3) and L1 psycholinguistic studies (2.4) that have been frequently quoted by the proponents of the semantic approach to vocabulary sequencing in support of their assumptions.

2.3 The Semantic Field Theory

The Semantic field theory starts from the premise that the vocabulary of a language consists not of a long random list of words, but rather of many interrelating networks of relations between words. These networks are called semantic fields. A simple example of a semantic field is the set of kinship terms: *mother*, *father*, *son*, *daughter*, *brother*, *sister*, *aunt*, *uncle*, etc. The theory assumes that each language has a unique semantic structure. The structure is a network of relations within which each lexical item derives its meaning from its relations with other items. The network is different from language to language and needs to be mastered by anyone learning a new language (Kittay and Lehrer, 1992). This leads some L2 writers and researchers (e.g. Corder, 1973; Mansouri, 1985) to conclude that it does not make sense to try to teach the meaning of a lexical item in complete isolation from the other items with which it forms a field.

The main thesis of the semantic field theory claims that the meaning of a word can only be understood and learnt in terms of its relation with other related words in the language (Trier, 1934; Porzig, 1934; Lyons, 1963, 1977; Lehrer, 1974; Kittay, 1987; Grandy, 1987; Kittay and Lehrer, 1992). However, it seems that there are differences in defining the term "related" among linguists and applied linguists embracing this theory. Although linguists (e.g. Kittay and Lehrer, 1992) and applied linguists (e.g. Channel, 1981, 1990) seem to agree that words are organised into semantic fields, there is disagreement among them concerning how words are related within the semantic fields. Some of them focus on paradigmatic relations as the major components of semantic fields (2.3.1), others focus on syntagmatic relations (2.3.2),

and a third group emphasises the importance of both paradigmatic and syntagmatic relations (2.3.3). Issues raised by these different groups in relation to the different components of semantic fields are analysed in the following sub-sections (2.3.1-2.3.3).

2.3.1 Paradigmatic Relations

Paradigmatic relations include synonymy, antonymy, conversness, contrast, hyponymy, and meronymy. Paradigmatic relations refer to the relationship between a word in a given syntactic position and other words which are substitutable for it in that same syntactical position. For example, *happy* is paradigmatically related with *sad* and *lucky* in expressions like *the happy boy*, *the sad boy* and *the lucky boy*. Similarly, *boy* is paradigmatically related with *girl* and *dog* in expressions like the *happy boy*, *the happy girl* and *the happy dog* (Lyons, 1977: 251).

Trier (1934) developed a notion of semantic field based upon paradigmatic relations, which means that a semantic field includes only words sharing paradigmatic relations. Lehrer (1974) and Kittay (1987) state that the majority of linguists have followed Trier's field concept and focused largely on paradigmatic sense relations. Similarly, the emphasis on paradigmatic relations seems to be adopted widely by L2 writers. Johnson (1995) asserts that most L2 acquisition writers, who support the application of the semantic field theory into L2 vocabulary instruction, focus on paradigmatic relations and neglect syntagmatic and thematic ones. One reason for the emphasis on paradigmatic associations is given by Channel (1990: 27), who notes that there is evidence for a high level syntactic organisation of the mental lexicon which comes from word association studies of bilinguals who respond, for example, to nouns with nouns and adjectives with adjectives (cf. Albert and Obler, 1978: 223). Thus, it is argued that paradigmatic associations between related words, of the *important/crucial* and *wash/soak* kind may be more important to mental lexical organisation than syntagmatic associations of the *wash/clothes* or *soak/stains* type. The examples that are often used by L2 writers and researchers seem to indicate their emphasis on paradigmatic relations. This is illustrated in the following quotation:

> "words not only have meaning, they also have a semantic value, which is specified by their relatedness to and their difference from words with adjacent meanings. For example, what *amazed* means, can only be fully grasped if we compare this word with words like *surprised, baffled, astonished."* (Behydt, 1987: 26)

2.3.2 Syntagmatic Relations

In contrast with Trier's semantic field concept which focuses only on paradigmatic relations, Porzig (1934) based his theory of semantic fields on collocations between a noun and a verb or between a noun and an adjective. According to this view, two words in such a collocation are bound together by what he called "an essential meaning-relation". The general nature of these relations is illustrated by such statements as *one bites with the teeth and licks with the tongue*, and *a dog barks*, as *bite* usually collocate with *teeth*, *lick* with *tongue*, and *bark* with *dog*. The importance of developing knowledge of such syntagmatic relations of words for L2 learners has been acknowledged by some L2 writers (e.g. Channell, 1981; Jullian, 2000) for several reasons: Firstly, L2 learners do not have as many opportunities to be involved in naturalistic conversational settings where there are examples of such collocational usage. Secondly, it has been asserted that collocational errors are among the most common lexical errors committed by learners. Some examples (Fromkin, 1973) are: *she laughed broadly, a good-looking view, a voyage by train.* Thirdly, a limited knowledge of collocational relations results in over-use of a few general items, which consequently leads to failure to express the variety of ideas one wants to communicate (e.g. *a good meal/teacher/lesson/day/girl/university*) (Channell, 1981).

2.3.3. Syntagmatic and Paradigmatic Relations

Lyons, (1977) notes that Trier's semantic field of paradigmatic relations and Porzig's field of syntagmatic relations should be seen as complementary rather than in conflict, and that semantic relations are of two types: paradigmatic and syntagmatic. The former includes synonymy, antonymy, converseness, contrast, hyponymy and meronymy; whereas the latter are relations between words that collocate in a grammatical string and that have semantic affinities, most evident in the collocational preferences between verbs and nouns, and between adjectives and nouns. A semantic field is therefore -according to Lyons- viewed as a paradigmatically and syntagmatically structured subset of the vocabulary. Some L2 writers (e.g. Jullian,

2000) would seem to agree with this view as they emphasise the importance of both paradigmatic relations which involve relations to similar meaning words and syntagmatic relations which involve other words it can be used with (collocations).

However, other linguists (Kittay, 1987; Kittay and Lehrer, 1992) assert that these semantic relations are not sufficient to describe the conceptual relations that exist among words, and that there are other important conceptually related categories that should be included within a semantic field. Kittay and Lehrer (ibid.) build on Fillmore's case grammar (Fillmore, 1968) and consider thematic relations such as AGENT (who), PATIENT (what), LOCATIVE (where), MOTIVE (why), TIME (when), and INSTRUMENT (how), as syntagmatic field relations. While Fillmore uses case grammar to analyse the deep structure of specific sentences, Kittay and Lehrer use it as a means of specifying syntagmatic relations of a semantic field, as illustrated by the following quote:

> "understanding the meaning of the verb to *sauté* requires understanding its contrastive relation to *deep fry*, *boil*, *broil* and also to affinitive terms like *cook* and the syntagmatic relations to *pan*, *pot* and many food items one might sauté." (Kittay and Lehrer, 1992: 4)

Several theorists of semantic fields (e.g. Barsalou, 1992; Grandy, 1992; Lehrer, 1992) have argued that paradigmatic and syntagmatic relations, including both collocational and thematic relations such as agents, patients, instruments, locations/places and time, are of equal importance. Similarly, a number of writers (e.g. Nelsen, 1976) have adopted this view and have emphasised that the components of a semantic field approach to vocabulary sequencing should include both paradigmatic (semantic) as well as syntagmatic (collocational and thematic) relations. In an example given by Johnson (1995) for the semantic field of the word "dog" (Figure 2.1), both paradigmatic and syntagmatic relations are used in presenting the word.

Figure 2.1: The Semantic Field of the Word "Dog"

Mammal

Coordinates	parts
cat	paw
cattle	claw
whale	coat
sheep	muzzle
pig	tail

People	Things
trainer	leash
groomer	muzzle
breeder	collar
owner	chain
veterinarian	bone

DOG

Actions	Characteristics
bark	brave
wail	royal
yelp	ferocious
yip	fierce
growl	friendly
sniff	intelligent
dig	slobbery

Functions	Places
pet	pet shop
sports	race track
guarding	home
herding	farm
hunting	forest
detecting	outdoor
guiding	street

Spots Dog
Work Dog
Toy Dog

(Johnson, 1995:89)

As can be observed from Figure 2.1, the semantic field of the word "dog" includes both paradigmatic (semantic) and syntagmatic (collocational and thematic) relations: Coordinates (other mammals), Parts of dogs: meronymy, Actions of *dog*: syntagmatic relation (e.g. bark, yelp, sniff, etc.) and descriptive Characteristics of *dog*: syntagmatic relation (e.g. ferocious, friendly, etc.). Thematic relations include *People*: AGENT/Who, people that deal with dogs or associated to dogs, *Function*: MOTIVE/Why, the use of dogs, and *Places*: LOCATIVE/where, places where dogs are found.

Various authors (e.g. Miller, 1986) assert that by analysing vocabulary into fields, we are no longer dealing with random lists, but with a systematic structure, which can be practically passed on to learners. If meaning does organise vocabulary then this would suggest that teaching vocabulary through meaning relations should be the best way to give learners organised access to the lexicon. In the following sub-section, I will discuss the limitations of this assumption.

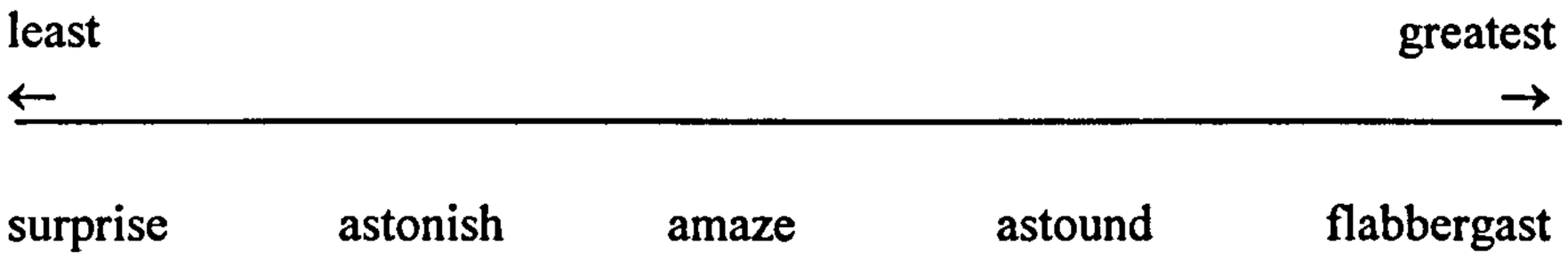
2.3.4 Applying the Semantic Field Theory to Vocabulary Teaching

It is frequently asserted that the organisation of words into semantic fields is what makes rapid vocabulary learning possible (Corder, 1973; Nelsen, 1976). It is also noted that the semantic field approach to vocabulary learning helps learners to perceive words not as separate items, but as members of larger semantic fields as this leads to better understanding of the words' meanings and faster incorporation into their L2 lexicon. However, I believe that before drawing pedagogic conclusions from the semantic field theory, some important issues need to be addressed. First of all, what kind of semantic relations should be included within a semantic field? As has been illustrated above (see 2.3), semantic field components are approached differently by different linguists and writers, there is disagreement with regard to the components of a semantic field. For example, should words be presented in terms of paradigmatic relations? Should pairs of items be presented syntagmatically (e.g. *pour water*) rather than in paradigmatic patterns? Or should items be presented according to both paradigmatic and syntagmatic relations into which they enter? It seems that the semantic field theory offers a number of ways in which lexical items might be presented to the learners, but that these ways have not been systematically tested. Thus, we do not know which components of semantic fields will be more useful than others in terms of pedagogical application.

Secondly, Corder (1973: 15) notes that the evaluation of the adequacy of a linguistic theory rests on the success of the theory according to some objective criteria in accounting for what it sets out to account for. Thus, he asserts that the semantic field theory has achieved a great deal of adequacy as it succeeds in accounting for the semantic relations holding between the lexical items of a natural language. However, this is not absolutely true, as the conception of semantic fields has been criticised repeatedly on the grounds of vagueness and subjectivity (cf. Miller and Johnson-Laird, 1976). Amer (1980: 254) notes that "semantic fields, whether for verbs or nouns, are purely subjective, i.e. they are organised by the linguist on the basis of his own intuitions". Moreover, in applied linguistics, the interest is not only in the adequacy or validity of linguistic theories but also in their utility for pedagogical application and in solving the practical problems faced by the language learner. Thus, the validity and adequacy of the semantic field theory do not automatically mean that it is useful in application in pedagogic contexts. In other words, there is no reason to

assume that what is most appropriate for describing the semantic relations holding between words is necessarily a useful way of describing how people learn and deal with word meanings. Thorough empirical investigation must be undertaken before claiming the theory to be useful in application. The test of a theory's utility is therefore empirical. It has been asserted by several L2 writers and researchers (e.g. Crow and Quigley, 1985; Carter, 1987; Tinkham, 1993, 1997; Hedge, 2000) that no empirical evidence has been produced in support of a semantic field approach to vocabulary instruction. However, I found one unpublished doctoral dissertation conducted by Feuge (1976) which gives support to the notion that words are better learned in semantic sets. Feuge conducted her study with 189 American university students who had no prior German background. They were divided into two groups: the first group was given 16 German words to learn accompanied by their English translations composing two sets: a set of eight semantically related nouns collected under the heading "nouns naming parts of an automobile", and a set of eight semantically related verbs grouped under the heading "verbs describing movement on foot". The second group of subjects was given a set of eight unrelated nouns under the heading "group 1", and another set of eight unrelated verbs under the heading "group 2". Two post-tests were administered: the first post-test was conducted after four days from the subjects' exposure to the learning material, and the second test was administered after seven days. The findings indicated that not only was a greater amount of vocabulary learned from the semantic sets than from the unrelated sets, but it was also retained for a longer period of time.

There are numerous articles published by L2 writers (e.g. Connolly, 1973; Martin, 1976; Cornu, 1979; Channell, 1981; Amer, 1986; Jullian, 2000) who provide examples of semantic field methodology that can be used in the classroom. In these studies, the researchers present their own experiences as teachers of using activities based on the semantic field theory with their students. These articles focus on the teaching of paradigmatic and collocational relationships, and describe the use of devices such as scales, hierarchies, and matrices for illustrating the semantic differences between items or their collocability. For example, Channell (1981: 119) presents the contrast between the words in the degree of wonderment by means of a scale:



However, the authors of such articles cannot claim that a semantic field approach to vocabulary learning is an effective means for vocabulary acquisition just because it was effective with their students. Without comparison groups of students in which they are exposed to different types of word sets (e.g. semantic vs. unrelated), these studies cannot claim to have provided evidence in favour of the semantic approach to vocabulary sequencing.

A third problem with the semantic field approach to vocabulary learning regards its suitability for the classroom environment. Although Gairns and Redman (1986) assert the usefulness of presenting lexical items in semantic sets, they note that lexical items sharing semantic ties might be easily confused, and thus they need to be handled extremely carefully; they need to be contextualised properly, and it is vital to highlight to students the differences between items as clearly as possible. Given the fact that limited time is allotted for explicit vocabulary teaching in most L2 curriculum (Johnson, 1995; Wall, 1999), it seems unrealistic that the teachers will be able to give the learners sufficient information about similar words to be able to differentiate them from each other.

A fourth question that needs to be addressed is the best method by which the semantic field theory can be applied to the pedagogical context. Does the semantic field approach to vocabulary learning mean presenting semantically related words initially to the students? Or should the words within a semantic field be taught separately first, and then, in later stages, be presented together to the students to draw their attention to the differences and similarities between these words as recommended by several L2 researchers (e.g. Nation, 2000b)? There are no clear answers to such questions.

A fifth and final issue regards the extent to which different pedagogic factors, such as the age of students, and the standard they have reached in the target language affect the application of the semantic field approach. For instance, the semantic field

approach to vocabulary sequencing might be suitable for some students and not suitable for others who are of different ages and of different proficiency levels. Behydt (1987) and Hedge (2000) recommend using this approach with advanced students when they have reached a point where they can benefit from making connections and distinctions among semantically related lexical items.

It seems that there are number of questions to be answered before drawing conclusions about the usefulness of the application of the semantic field theory in L2 learning contexts. However, this theory appears to be widely embraced by many authors in the field of language learning due to the support they claim it to have from L1 psycholinguistic studies (e.g. Moody, 1982; Amer, 1986). In the following sections, I will critically review the L1 psycholinguistic studies that are often quoted by the advocates of the semantic approach to vocabulary sequencing, as evidence that words are stored in the mental lexicon in semantic fields, and that therefore a new vocabulary item must be presented within the field to which it belongs.

2.4 Psycholinguistic Studies Investigating the Nature of the Mental Lexicon

It is argued by many writers and researchers (e.g. Deese, 1965; Tulving, 1972; Smith *et al.*, 1974; Luria, 1982; Corson, 1983) that lexical items sharing semantic features are stored together in organised structures in the memory, so that when a lexical item in one structure is activated, the whole structure becomes activated and ready for use. The findings of some L1 psycholinguistic studies are usually referred to as evidence in support of this assumption. L2 writers and researchers usually refer to relevant theoretical and descriptive work in the psycholinguistics of L1, and discuss its possible applications to L2 acquisition because, as asserted by Channell (1990), whereas for L1 the research on the nature of the mental lexicon is reasonably well developed, our understanding of the nature of the mental representation of the lexicon in the mind of an L2 speaker of a language is still extremely limited. To put this another way, we do not know what the L2 learner's mental lexicon looks like. In the following section, there will be an attempt to review and evaluate some of the studies that are frequently quoted as evidence in support of the assumption that semantically related words are stored together in the mental lexicon. These studies are L1 word association experiments (2.4.1), native speaker speech errors (2.4.2), and L1 memory and recall research (2.4.3).

2.4.1 L1 Word Association Experiments

These experiments are probably the most widely known method for probing into the organisation of the mental lexicon. In these experiments, the subjects are given a list of words and asked to respond to each with the first word that comes to mind. They may also be required to respond with several words that they associate with each stimulus. Word association tests with adult native speakers have generally found that most of the subjects gave the same word in response to a given stimulus word and very few different words were given (Deese, 1965; Pollio, 1966; Postman and Keppel, 1970). Meara (1982: 29) describes the responses of adult native speakers as "extremely boring and predictable". In English for example, in response to the word *man*, over 70 per cent of adult native speakers will give the response *woman*, give *black* in response to *white*, *butter* in response to *bread* and so on (Meara, 1980). This implies that native speaking adults have a tendency to produce paradigmatic responses which might, in turn, suggest that the organisation of the native speakers' mental lexicon is semantically driven.

Many researchers in the area of L2 acquisition, as suggested by Carter and McCarthy (1988: 16) make the assumption that an L2 user's mental lexicon resembles that of an L1. This I believe has led some L2 researchers (e.g. Mansouri, 1985) to accept unquestionably the findings of L1 word association studies with adult native speakers and to apply them to L2 vocabulary learners, and therefore suggest that vocabulary teaching should help in the forming of such associations between words. However, the extent to which the L2 lexicon is organised in the L2 learner's mind in a similar way to that of the native speaker has been questioned by another group of researchers (cf. Harely, 1995), on the basis that this might considerably affect conclusions concerning the relevance of the learning of words in a first language for studies of second language acquisition. Studies of L2 learners' word associations have been conducted with the aim of gaining some insights into the organisation of the L2 lexicon and whether this organisation is similar to that of the L1 mental lexicon. The most prominent and frequently quoted studies in this area are those conducted by Meara (1982, 1984). In the following section (2.4.1.1) I will refer to the results of Meara's experiments and the conclusions that he draws from these results. Then, I will refer to the views of another group of writers who have argued against Meara's assumptions (2.4.1.2).

2.4.1.1 Meara's Word Association Tests

Meara (1982,1984), drawing on the results of a series of word association tests, known collectively as the Birkbeck Vocabulary project, claimed that "there are good reasons for believing that there might be significant differences between the lexicon of a L2 learner and that of a native speaker" (1984: 231). The results of Meara's studies indicated that L2 learners tend to produce "clang associations". These, he defines, as responses which are primarily influenced by the form of the stimulus word, rather than by its meaning (e.g. *reflect-effect*), instead of semantically related responses that adult native speakers typically produce (see 2.4.1). This, as suggested by Meara, implies that whereas in the native speaker's mental lexicon there are strong semantic links between the words, the connections between words in additional languages are primarily phonological. Thus, in Meara's opinion, phonology appears to play a much more prominent organising role in the mental lexicon than it does for native speakers. Moreover, Meara notes that the connections between words in the second language learner's mental lexicon are less stable than the connections of native speakers. Whereas it is a general finding of L1 word-association tests that native speakers' associations are relatively stable as subjects' responses change very little from one week to another, L2 learners' responses are considerably less stable than the response patterns of native speakers.

Meara's data has been quoted (the most frequently) in support of the notion that the L2 mental lexicon is structurally different from that of the L1 (e.g. Carter, 1987; Laufer, 1989; Ellis and Beaton, 1993; Gass and Selinker, 1994). However, this notion has been challenged by other researchers (Singleton and Little, 1991; Singleton, 1999, Wolter, 2001) for reasons I outline in the following subsection.

2.4.1.2 Criticisms Directed to Meara's Tests and Interpretations

Meara's interpretation of his data has been criticised (Singleton and Little, 1991; Singleton, 1999; Wolter, 2001) on three counts: (1) the nature of the word association tests he used, (2) the data generated through word association tests from native speakers, and (3) what is known about child/adult differences in performance on L2 word association tests. These three aspects are illustrated in some detail in (i-iii) below.

(i) The Nature of Word Association Tests

The nature of the word association tests used by Meara are criticised on the basis that some of the stimulus words he used are quite rare items such as *caque* (herring-barrel). Singleton (1999:131-2) notes that he asked a large class of French students about the meaning of *caque*, and no one knew it. Based on Meara's indication that his subjects had relatively modest knowledge of the L2, it seems likely that the subjects' responses to these unfamiliar words reflect a simple state of ignorance rather than an L2 mental structure which is qualitatively different from the L1 lexicon. The findings of a L2 word association experiment conducted by Beck (1981) seems to go along with the assumption that the rarity of the word might result in non-native like responses.

In Beck's experiment, a group of English speaking students learning French at "A" level were given a list of 40 French words that they were unlikely to know, and asked to produce chains of responses to each one. In line with Meara's results, they produced a large number of clang-type responses and very few native-speaker-like responses (see 2.4.1). Subsequently 20 of the words were introduced into the students' class-work, and two further tests were given over a twelve-week period. The results of the re-tests showed that there was no real change in the responses to the words that had not been used in class teaching. In contrast, the taught words changed markedly, producing greater number of total responses, fewer clang associates, and a greater proportion of native-like responses. One can argue that this might imply that the familiarity of the words does affect the subjects' responses in a word association test and that when the words are familiar to L2 learners, they tend to produce native-speaker like responses.

Another justification for the unexpected responses given by Meara's subjects is given by Palmberg (1990). Palmberg refers to the possibility that in some instances the stimulus word might simply have been mistaken for another word of a similar orthographical or phonological shape and that, therefore, if the subjects misperceived the stimulus *beton* as *baton*, then the response *orchestra* could be considered a semantic associate. Palmberg notes also that there might have been influence from patterns of semantic networks in the learners' mother tongue which is different from L2 patterns (see 2.3).

(ii) Data Generated from L1 Word Association Tests

The second criticism directed to Meara's interpretations of his studies' findings stems from the comparison between word association tests conducted with L2 learners and those conducted with adult native speakers. The bulk of data generated through L1 word association tests, as illustrated by Wolter (2001), has been limited to a relatively small number of fairly common prompt words that tend to elicit a similarly limited set of fairly predicted responses. Wolter (ibid.) notes that in the few studies in which lower frequency words have been used as prompt words, the pattern of responses has been quite different, resulting in what could be classified as a substantial number of "nonnativelike" responses (Postman, 1970; Stolz and Tiffany, 1972). Singleton (1999: 132-133) asserts that when subjects in L1 situations encounter totally unfamiliar lexical items, they tend to make wild guesses based on any clues to connections with known words which the sound or look of the unfamiliar item may offer. It could be concluded, therefore, that this is likely to happen with L2 learners when they encounter unfamiliar words.

(iii) Child/Adult Differences in L1 Word-Association Tests

Taking into account the child/adult differences in L1 word-association tests raises a further doubt about Meara's interpretations. Brown and Berko (1960), Ervin (1961), Entwisle (1966), and later Paermo (1971) all compared the patterns of response type for native speaker children of different ages. In all these studies, the groups of older children consistently demonstrated a tendency to produce a higher proportion of paradigmatic responses (see 2.4.1) than the groups of younger children. Additionally, "clang associations" were shown to diminish with age. The implication of such findings might be that the proportion of phonologically motivated responses produced reflect the level of proficiency in a particular language rather than the status of the language in question in terms of nativeness or non-nativeness. In turn, this might imply that the phonological factor is not peculiar to L2 lexical processing, but is prominent in the early stages of dealing with particular lexical items in both L1 and L2.

Evidence in support of the view that the type of responses in word association tests, whether semantically or phonologically reflects the person's level of proficiency in a particular language rather than the organisation of his lexicon, is provided by

Soderman (1993). Working with four groups of learners of English as a foreign language of different levels of proficiency, Soderman found a shift in response type with respect to the same English word association test from proportionally more to proportionally fewer clang associates and from proportionally more to proportionally fewer syntagmatic responses (see 2.3.2) as L2 proficiency level increased. The findings show that a shift in response type is discernible between less-proficient and more proficient stages of L2 development. These findings seem to point to what Ard and Gass (1987:24) refer to as "an increasing importance of semantically based factors in lexical organisation as learners increase in proficiency". Further evidence is found in Henning's (1973) study of the phenomenon of acoustic-semantic clustering in relation to second language vocabulary learning. His objective was to determine whether L2 learners encode vocabulary in memory by families of associated meanings and/or interrelated sounds, and to ascertain the correlation between such encoding and language proficiency. His results indicated that L2 learners do encode vocabulary into acoustic and semantic memory clusters. Learners at a low-proficiency level appeared to register vocabulary in memory more by sound similarities than by related meanings; high proficiency level learners relied on associated meanings rather than sound similarities.

Finally, the idea that the mental lexicon of either L1 or L2 speakers differs according to their levels of proficiency has gained support from the word association experiments conducted with bilingual speakers. The findings of these studies indicated that bilinguals tend to give less semantic responses in their weaker language (cf. Meara, 1980; Machalias 1991).

2.4.1.3 Similarity of L1 and L2 Mental Lexicon

The opponents of the notion suggested by Meara and other writers that there are differences in the organisation of L1 and L2 mental lexicon (e.g. Singleton, 1999; Wolter, 2001) adopt another view. They believe that the operation of the L2 mental lexicon closely resembles that of the L1 mental lexicon and that the phonological factor is not peculiar to L2 lexical processing, but is prominent in the early stages of dealing with particular lexical items in both L1 and L2. They consider the following patterns as evidence for a structurally similar L1 and L2 mental lexicon:

(1) Both native speakers of English and L2 learners of various levels of proficiency demonstrate syntagmatic-paradigmatic shifts in responses.

(2) Both native speakers of English (when presented with low-frequency prompt words) and L2 learners of various levels of proficiency produce clang responses.

(3) A large diversity of responses can be found in the data of word association tests collected from L2 learners, native speaker adults (when presented with low-frequency prompt words), and native speaker children.

In addition to these patterns, some recent empirical studies have given completely different findings to those of Meara's, suggesting differences in the organisation of L1 and L2 lexicons (see 2.4.1.1). For instance, in a study by O'Gorman (1996) of the English L2 word-association test responses of 22 Catonese speakers whose English was judged to be in the "mid-proficiency range", there was only one clang associate among the subjects' most common responses (i.e. *wealth* in response to *health*). In all other cases, the responses had clear semantic links with the relevant stimuli.

Some L2 writers (e.g. Harley, 1995) seem to agree that the patterns of development in both L1 and L2 mental lexicon are similar to each other in that the growth in either L1 or L2 word knowledge moves gradually from an initial focus on sound similarities to a more stable, semantically motivated type of lexical organisation.

If we return to the question mentioned earlier (see 2.4.1) concerning the conclusions to be drawn from word association experiments conducted with native speakers to the L2 context, I have found this to be far from a straightforward process. As mentioned earlier (see 2.4.1) the findings of L1 word association experiments encouraged some researchers (e.g. Mansouri, 1985) to suggest that human knowledge of words is associative in nature in that semantically related words are grouped together, thus recommending a semantic approach to vocabulary sequencing. However, the findings of several word association experiments with L2 learners (Meara, 1982, 1984) indicate that L2 learners' responses appear to be often influenced by the phonological or orthographic form of the stimulus word rather than by its meaning. Similarly, Laufer (1989) reported that formal similarities between words were a source of error

among adult EFL learners she studied, suggesting that in contrast to the mental lexicon of L1, the connections between L2 words are primarily phonological. Taken together, this might pedagogically imply that it is better to actually present L2 learners with words that are similar in their phonological and orthographical forms rather than their meanings.

On the other hand, taking into account word association studies conducted with L2 learners with different proficiency levels which indicate that the organisation of the mental lexicon of L2 learners differs according to the learner's level of proficiency (e.g. Soderman, 1993) might lead to different conclusions. The findings of these studies, in addition to some L2 teaching studies (e.g. Henning, 1973), show that more advanced learners tend to rely more on shared semantic features in recognising and grouping words while less advanced students tend to rely more on sound similarities. Thus, if one can draw an insight from these findings for the preparation of vocabulary materials for L2 learners, it would be - perhaps - that for beginning and intermediate students, textbook designers should take advantage of the acoustic associations that seem to characterise their mental lexicons by introducing sets of words sharing phonological rather than semantic similarities, i.e. sound alike words. Then, in the advanced stages of language learning, the paradigmatic relations between words should be emphasised.

However, even these conclusions cannot be made confidently as some of them are based on the findings of word association tests with L2 learners, which result in responses, as mentioned earlier (see 2.4.1.1), that are generally characterised as being unstable. Meara (1984) notes that this fact severely reduces the value of one-off studies of L2 learners' word associations. One can argue, therefore, that this instability affects the findings of the studies that have attempted to demonstrate a correlation between different proficiency levels and the subjects' responses in word association experiments.

2.4.2 Native Speaker Speech Errors

Further evidence from psycholinguistics that suggests that the mind takes account of semantic similarity comes from speech errors made by native speakers (often called "slips of the tongue"), assuming that the mistakes we make offer an insight into the

way the mental lexicon is organised. Some second language researchers (e.g. Mansouri, 1985; Amer, 1986; Johnson, 1995) refer to studies of lexical substitution errors showing that speakers often substitute an intended word for one in the same semantic field (Garrett, 1992), as evidence that the mind uses semantic similarity in classifying words, and that L2 vocabulary should be taught in semantic sets. The following are examples of semantic errors where both the error and the target are related in meaning.

Examples

(a) I really like to - hate getting up in the morning.
(*like – hate*)
(b) It's at the bottom - I mean - top of the stack of books.
(*bottom – top*)
(c) The room is too damn hot - cold.
(*hot – cold*)
(d) The oral - written part of the exam.
(*oral – written*)

(Fromkin, 1973: 235-6)

Another type of semantic errors are blends which are non-existent words consisting of a mixture of sounds from two words with similar semantic features, and which could both be appropriate in the given context.

Examples

minor / trivial → minal
spank / paddle → spaddle
velars / dentals → dentars
wow / flutter → flaw
before / first → beforst
clarinet / viola → clarinola

(Fromkin, 1973: 37)

The assumption that the lexicon is organised in terms of semantic fields is also supported by evidence from speech errors made by people who have language disorders following brain damage. Evidence from aphasia studies shows that substituted words often fall into the same semantic field, as in cases where patients will read *tree* for *flower*, *spoon* for *fork*, *night* for *dark*, and *liberty* for *democracy*. (Luria and Vinogradova, 1959)

These kinds of errors seem to support the assumption that words are arranged in the mental lexicon according to meaning. However such an assumption cannot account for the occurrence of other type of errors: malapropisms. In contrast to semantic errors, malapropisms are those where error and target are related in pronunciation but not in meaning.

Examples

prepay → prepare
contamination → combination
temperature→ literature

(Nootboom, 1973: 154)

If we take malapropism errors into account while making assumptions about the organisation of the mental lexicon, this will probably lead us to different conclusions. As the error and target are related by pronunciation similarities, this might posit a phonological arrangement of words in the mental lexicon, so that the search for one word may activate its near neighbour which is a word with a similar sound. In fact, a model of the mental lexicon has been proposed to account for these pronunciation errors. Fay and Cutler (1977, 1982) argue that malapropism errors reveal more about the structure of the mental lexicon than do semantic errors. They claim that pronunciation-based errors could not occur if the lexicon was arranged according to meaning, since words with similar pronunciation would not have any access channels in common. On this evidence, they posit a single mental lexicon phonologically arranged, accessed by two different networks, one phonological and one semantic. Thus, this might account for the fact that both semantically and phonologically based errors occur in production. Fay and Cutler (1977) hypothesise that in the mental lexicon words are simply arranged in terms of phonological similarity on a left-to-right-basis, so that any word's nearest neighbour is the word which sounds most like it left-to-right.

Interestingly, the advocates of the notion of a semantically organised lexicon (e.g. Mansouri, 1985; Amer, 1986) refer to semantic errors and neglect other types of errors such as malapropisms that might lead to completely different interpretations.

Some writers (e.g. Thornbury, 2002:17) take both form-related and meaning-related errors into consideration, and suggest that the mental lexicon is an overlapping system in which words are stored as double entries – one entry containing information about meaning and the other about form. It seems that currently we still do not know how the L2 mental lexicon is organised, and thus we do not know which kind of associations (phonological or semantic) are the most useful in aiding retention. Channell (1988) notes that there is a need for a wide-ranging study of naturally occurring L2 speech errors to parallel the many studies of L1 speech errors and to enable comparisons. Such studies should provide a clearer understanding of the nature of the L2 mental lexicon.

2.4.3 Memory and Recall Research

The body of literature often cited in support of presenting learners with semantically linked words comes from monolingual memory studies conducted with adult native speakers. These studies involve giving subjects a series of L1 words (all of which are well known to the subjects) and they are told to memorise them; the subjects are then required to recall all the words. The findings of these studies, in general, reveal that native speakers tend to organise what they recall, and that semantically related words are remembered together. Further, they indicate that lexical items that have been organised into semantic categories are better recalled than unrelated or indirectly related items. Some writers (e.g. Fuge, 1979; Moody, 1982; Karbon, 1984; Crow and Quigly, 1985; Behydt, 1987) have interpreted these findings as providing support for the notion that semantically related words are organised in memory in semantically related categories, and therefore it is logical to use semantic sets in L2 vocabulary teaching. It seems that this group of writers believes that as semantic grouping works to enhance recall of words in list-recall tasks with native speakers, it will do the same for L2 learners. Cornu (1979: 23) argues "that these studies show the psychological validity of semantic fields, they also offer clues concerning the order in which words should be introduced to facilitate their implementation within long-term memory".

In what follows, I will refer to some examples of these early studies that have aimed at investigating how words are stored in and retrieved from memory. This is followed by a discussion regarding the appropriateness of drawing conclusions from the findings of these studies to the field of L2 learning.

In one study (Bousfield, 1953), a phenomenon termed "clustering" was found. Bousfield read a list of randomly arranged words to the subjects and asked them to recall as many as they could. The list included 60 nouns, made up of 15 animals, 15 names, 15 professions, and 15 vegetables. However, the instances of each category were separated by many intervening items from other categories in the exposure list. Analysis of the data indicated that despite the random order of input, Bousfield's subjects tended to recall the words in clusters or "a sequence of associates having an essential relationship between its members" (Bousfield, 1953:229).

Jenkins and Russell (1952) used similar procedures to Bousfield's (1953) with the exception that the word list used was made up of randomly presented highly associated stimulus and response words (e.g. *table-chair*, *man-woman*, *mountain-hill* etc.). The word list was read to the subjects, then they were asked to recall as many words as they could, and they were told that the order in which the words were given was not important. Again, Jenkins and Russell found that despite the fact that the words were split up during presentation, they tended to be recalled as pairs.

Bower *et al.* (1969) conducted several experiments to compare the free recall of categorised word lists consisting of several instances of several taxonomic categories that are presented in a blocked as opposed to a randomised fashion. Four sets of words were learned concurrently. The subjects in the blocked condition were exposed to a category label and its instances in each set organised hierarchically, as in this example:

MINERALS				
METALS			STONES	
Rare	Common	Alloys	Precious	Masonry
Platinum	Iron	Bronze	Diamond	Limestone
Silver	Lead	Steel	Sapphire	Granite
Gold	Copper	Brass	Emerald	Marble
	Aluminium		Ruby	Slate

(Bower *et al.*, 1969: 324)

For students in the random condition, the same words were thoroughly scrambled, then presented randomly to the students avoiding obvious conceptual relations among words. The subjects were asked to recall the words orally in any order they preferred. Bower *et al.* found that recall was two to three times better when the subjects were exposed to the blocked hierarchies. Further, the findings of this study led Bower *et al.* to claim that if a subject can discover or learn a rule which relates the items of a list to one another, he uses this rule as a retrieval plan to recall items from memory, and thus this leads to very high levels of recall.

Cofer *et al.* (1966) conducted three experiments to compare block and random presentations for lists composed of high-and low-frequency associates. From the examples given in the study, one can assume that high-frequency lists were composed of semantically related words, whereas the low-frequency lists were composed of words related indirectly or thematically to each other. There were two lists of words: one was composed of high frequency associates to the category names of occupations, weapons, four-legged animals, and articles of clothing. The other list included low-frequency associates to each of the same category names. The lists were of two types, block and random. For the block presentation, all the items from one category occurred first, then all from another, and so on. For randomised presentation, the words were presented in a randomised sequence. The subjects were asked to recall as many words as they could in any order. The results indicated that word recall was higher in high-frequency lists than in low-frequency lists. Further, block presentation increased word recall in high-frequency lists, but not in low-frequency lists.

Taken together, the findings of the studies I have presented above in 2.4.3 demonstrate the following: Firstly, following a randomised presentation of associated or categorised words, immediate recalls manifest the phenomenon of clustering. Secondly, there is a high correlation between clustering and recall. Thirdly, lists including semantically related words are recalled better than lists composed of thematically related words or unrelated ones.

After summarising the findings, the question is how far can we apply these findings to foreign vocabulary learning? As mentioned above, for L2 vocabulary learning, some L2 writers (e.g. Moody, 1982; Amer, 1986; Behydt, 1987) have taken these findings

to imply that a semantically organised presentation of vocabulary should be more effective than a purely random presentation. However, it is not entirely clear how a task which requires subjects to recall already well known words which appeared on a study list is similar to learning brand new L2 words. As mentioned at the beginning of this section, all these studies involved native speakers being presented with lists of L1 words and then having to recall them. The subjects already knew all the words, therefore the learning was not actually paired learning. This is not like learning foreign vocabulary at all, as all the word forms are familiar and the learning does not involve relating a form to meaning. There is a very big difference between recall of known items which are already part of the subjects' vocabulary and learning new items. To replicate foreign language learning, the learning needs to involve associating an unfamiliar form (L2 word) with a known meaning (L1 translation or L2 equivalent). Of course knowing a word is much more complicated than that (cf. Richards, 1976; Nation, 1990) but still, as Nation (2000a) asserts this is a central aspect of learning a foreign word. Therefore, on balance I suggest that the findings of L1 memory and recall studies might indicate that words are organised in semantic networks in the L1 mental lexicon, although the subjects were not given new words to learn in these studies. However, applying this assumption to L2 learners by assuming unquestionably that their processes of storing and retrieving words of memory is similar to those of native speakers and generating conclusions to the L2 learning context is difficult to accept.

In addition to the merits of adopting a semantic approach to vocabulary sequencing that are frequently referred to in the literature (see 2.4), the findings of the semantic field theory and L1 psycholinguistic studies discussed above have led to the widely propounded idea that semantically related vocabulary items should be presented together to EFL learners, as will be illustrated in the following section (2.5).

2.5 The Semantic Approach to Vocabulary Sequencing in EFL Learning Contexts

Several writers (e.g. Tinkham, 1993, 1997; Waring, 1997; Thornbury, 2002; Finkbeiner and Nicol, forthcoming) assert that it is common practice in EFL textbooks to introduce words in semantic groups. Examples given by these writers are: "parts of the body" in *Fast Forward 1*(Black *et al.*, 1986); "clothes" in *The New*

Cambridge English Course 1 (Swan and Walter, 1990); "jobs" in *Headway Elementary* (Soars and Soars, 1993); "foods" in *Headstart Beginner* (Beaven, 1995); "family members" in *Express Ways* (Molinsky and Bliss, 1996). More recently in *Cutting Edge: Starter* (Cunningham *et al.*, 2002), most of the new vocabulary items given to the students are presented in semantic sets. For examples, the learners are required to learn "places in a town", "colours and sizes", "jobs", "family members", "nationalities", "quantities", "food and drink", "parts of the body" and so on.

There seems to be a pervasive belief among textbook writers that sequencing lexical items according to meaning similarity will aid vocabulary building. The most large-scale explicit application of the semantic field approach to vocabulary sequencing is in the two books by Rudzka *et al.* (1981, 1985) which use semantic fields and componential analysis to present new vocabulary. Instead of the words being introduced singly, words from the same semantic field are learned in groups and not as single items, an example is given in Figure 2.2.

Figure 2.2: Kinds of Hitting

strike	hit	punch	clout	slap	smack	
+	+	+	+	+	+	deal a blow
		+				using a close fist
			+			not aiming carefully
			+			hard
			+			especially on the head
				+	+	sharply
				+	+	using the flat of the hand
					+	producing a noise
				+		sometimes in fun
					+	usually to a child in punishment

(Rudzka *et al.*, 1985: 13)

Further, even some dictionaries are incorporating more information than traditional dictionaries on semantic links. One example is the *Longman Lexicon of Contemporary English* (McArthur, 1981) which groups together items within the same semantic field, e.g. *good-looking*, *beautiful*, *lovely*, *pretty*, *attractive*, *comely*, *handsome*. The main body of the lexicon covers 14 subject areas, within each of which there are several sets of related words. The author and publisher claim that this dictionary is designed to help students increase their vocabulary in a natural and

appropriate way. A similar principle governs the organisation of both the *Cambridge Word Selector* and the *Longman Language Activator* , in which words are organised according to shared or similar meanings. For example, the word *modern* in both dictionaries is presented with similar words such as *up-to-date*, *contemporary*, *futuristic*, and *avent-garde*. Thornbury (2002: 62) asserts that a meaning-based organisation is particularly useful for performing speaking and writing tasks, since it allows the learner to search for the exact word to represent an intended meaning.

Another example is WordNet, which is a lexical database for the English language in which the components of semantic fields, representing various semantic relations, are specified in the presentation of vocabulary, so that users may search the dictionary conceptually as well as alphabetically. WordNet provides information on paradigmatic relations of words, namely, synonyms, antonyms, co-ordinate terms, hypernms/hyponyms, and meronyms. The users may search a word by typing it in, and then select from the menu bar whichever semantic item or semantic relation to look up. The most significant feature of WordNet is its attempt to organise lexical information in terms of meanings, rather than word forms, in contrast to traditional alphabetically organised dictionaries in which words with similar or related meanings are haphazardly scattered through the alphabetical list.

2.6 Summary

In this chapter, I have attempted to describe the motivations given throughout the literature by many L2 researchers and writers who recommend the semantic approach to vocabulary sequencing (2.2). In addition, given that the semantic field theory and the findings of L1 psycholinguistic studies with regard to the organisation of the mental lexicon are often quoted by the proponents of the semantic approach to vocabulary instruction as further justifications for their position, I have reviewed and analysed the semantic field theory (2.3) and the L1 psycholinguistic studies namely, word association experiments (2.4.1), native speaker speech errors (2.4.2), and memory and recall research (2.4.3) to assess their strength as evidence for this approach. Finally, I have referred to the popularity of the semantic approach to vocabulary sequencing in the EFL learning contexts (2.5). In the next chapter, I will present the opposing view that sequencing vocabulary items according to semantic similarity actually hinders rather than facilitates learning.

Chapter Three

Counter Perspectives to the Semantic Approach to Vocabulary Sequencing

3.1 Overview

In the previous chapter, I outlined the justifications provided throughout the literature for recommending the semantic approach to vocabulary sequencing. In this chapter, I shift the focus to the opposing views of writers and researchers who reject the arguments for sequencing vocabulary according to meaning similarity. I will first consider the disadvantages of presenting words in semantic sets, as proposed by some researchers and writers. I will then critically explore the interference theory and the distinctive hypothesis as they are often used as a rationale for the rejection of the practice of presenting new vocabulary items sharing semantic features together. Finally, I will review the interference studies conducted with the aim of investigating the effects of presenting words in semantic sets in L2 learning contexts, and from there, I will look at some of the limitations of these studies.

3.2 The Pitfalls of Presenting New Words in Semantic Sets

Although, a large number of writers and researchers seem to emphasise the importance of presenting semantically related words together (see 2.2), in recent years, contradictory advice to teachers and textbooks designers has been emerging, which states that when presenting lexical items for the first time, it is not helpful to draw attention to other unfamiliar or poorly established words of similar meanings, as this actually hinders rather than helps learning the new words. The following extracts illustrate this view:

(1) "...most language teaching courses make vocabulary learning more difficult than it should be as a result of the way vocabulary in the course is sequenced. Grouping opposites, synonyms, and items in a lexical set together causes interference that results in confusion for the learners..." (Nation, 1994: 4)

(2) "...teaching words together which are too similar can be counter-productive. With a pair like *left* and *right*, learners often confuse which word applies to which direction. In addition to learning the meaning of the two words, the learner has the additional burden of keeping them separate..." (Schmitt and Schmitt, 1995: 134)

(3) "If one teaches words together that have similar meanings, such as synonyms, antonyms, etc., students may remember the meanings well enough, but might not be able to match each meaning to its corresponding word. (Schmitt and McCarthy: 1997: 232)

(4) "Words which are similar in form or meaning are more difficult to learn together than they are to learn separately... The similarity between related items makes it difficult for the learner to remember which was which. Confusion rather than useful learning is often the result. In the early stages of learning it is not helpful to use the opportunity to teach a word as the opportunity to teach other related words." (Nation, 2000b: 92)

(5) "If two or more similar words are initially taught together, it might actually make them more difficult to learn. This is because students learn the word forms and learn the meanings, but confuse which goes with which." (Schmitt, 2000: 147)

Several disadvantages for presenting words in semantic sets have been given throughout the literature. For example, Cohen (1990) and Nation (1990) drew attention to the cross-association phenomenon as one of the main shortcomings of presenting new words sharing semantic characteristics at the same time. The general rule of cross-association, as Nation (1990, 2000a) describes it is that when two or more items share some strongly related common features and they are learned together at the same time, the similar features make them become strongly associated with each other, and the differences interfere with each other. Nation gives an example of teaching the words *hot* and *cold* together. The two words share the common features of representing degrees of heat. Their differences are their different form, the different ends of the scale they refer to, and for the L2 learner, their different L1 translations. If the two words are taught together, learners will know that they refer to heat, but many will get confused about which word goes with which of the two meanings (see quote 4). Nation (ibid.) believes one solution is to teach the most frequent word first and then, after it is secure in the learners' mind, teach the other word. Schmitt and McCarthy (1997) note that the potential for confusion due to cross association makes avoiding it one of the most important principles in vocabulary teaching.

In addition to the cross-association phenomenon, West (1955) saw that the linking together of semantically related words, or "catenizing" as he called it, as an undesirable process for two reasons. Firstly, it means that words of widely differing usefulness (as determined by word frequency counts) will be taught together when the focus should be on teaching higher frequency words. Secondly, in order to teach semantically related words together, very unrealistic situations will be used, as

artificial lessons will be made to fit the set of words. For example, moving *pens*, *pencils*, *rulers*, the opening and shutting of *doors* and *windows* (which do not need opening or shutting), pointing to one's *leg*, *knee* and *foot*, etc. In real life the words have to fit the situation that demands them, thus the situation determines the words. West (1955) asserts that these artificial situations or unrealistic sentences that present semantically related words together have no more teaching value than learning the words in a word-list. West also notes that one reason behind the tendency of sequencing semantically related words together is that this approach is much easier to use as a basis for constructing textbooks than devising realistic situations in which words are used because they are imperatively needed.

Carter and McCarthy (1988: 96) raise two additional criticisms against teaching words in semantic sets. The first one is that focusing on semantic relations among words may lead to a neglect of the syntagmatic aspect in the organisation of vocabulary. As mentioned in Chapter 2 (see 2.3.1), the tendency in many L2 studies (e.g. Behydt, 1987) is to focus on paradigmatic associations. The second disadvantage concerns developing a rather static view of the lexicon, as learners are encouraged to acquire knowledge about words rather than of the words themselves.

Some writers and researchers (e.g. Tinkham, 1997; Thornbury, 2002) suggest that instead of focusing on semantic relationships and presenting learners with sets of words sharing semantic and syntactic similarities, clustering of words should be based on the psychological associations among words that share a thematic concept (Tinkham, 1997). This means, as an example, instead of presenting the word *frog* with other animals, it should be presented with words that are thematically linked, and thus have a looser relation than the ones within the semantic set such as *green*, *pond*, *hop*, and *slimy*. It is argued that as thematically related words do not substitute for each other, there is less chance of confusion. Further, because they can be threaded into a narrative, they may be more easily and naturally practised and, thus, more easily recalled, as it is easier to remember a narrative with words embedded in it, than to recall a list of decontextualised words (Thornbury, 2002: 37). This seems to go along with the episodic view of memory claiming that the memory is organised around personal experiences or episodes rather than semantic categories, and thus lexical items are linked together by their occurrence in the same event or time span

(Tulving, 1972, 1983; Mandler, 1979; Cohen, 1983). Some psychologists (e.g. Schank and Abelson, 1977; Anderson, 1994) are in favour of the notion of episodic rather than semantic memory, as the former is used to refer to a store of knowledge that is relative to a certain context, while the latter is only concerned with meaning similarity between words that are independent of any context. It is argued that semantic networks, suggested by some researchers (e.g. Collins and Quillan, 1972) to be the core of memory organisation, are not a sufficient representative of our knowledge. In line with this argument, Markman and Hutchison (1984) assert that in naturally occurring situations, vocabulary items are not organised by category but, rather, that they are embedded in spatial, temporal, and causal contexts and, thus, such relational structures as events and themes might be an effective way of organising new information to make sense of what we encounter. An example of thematically based clustering given by Tinkham (1997) is in *Coast to Coast 3* (Harmer and Maybin, 1989: 67) in which the words *haunted*, *moonlight*, *yell*, *ghost*, and *groan* are selected for instruction from a short passage about a haunted house.

A further objection to sequencing vocabulary items according to meaning similarity arises from the fact, as I illustrated in the previous chapter (see 2.3.4), that there is hardly any empirical evidence that gives support to the notion that presenting semantically related items together facilitates learning. Waring (SLART L, 2001; SLVA, 2002) argues that many teachers and coursebook writers use their intuition rather than empirical evidence when selecting the vocabulary items to be presented to the learners, as it just seems an intuitively appealing idea to teach lexical items similar in their meaning together to help in building semantic associations between them.

Further objections against presenting words in semantic sets have been motivated by the interference theory and the distinctiveness hypothesis which I discuss in the following subsections.

3.2.1 The Interference Theory

Psychologists have been interested in the interference phenomenon between similar words since it was suggested as one of the major causes of forgetting (cf. Crowder, 1976; Baddeley, 1997). Interference theory implies that when words are being learned at the same time - but are too similar or share too many common elements -

then these words will interfere with each other, thus impairing retention of them. The degree of interference increases with the degree to which the interfering material becomes more similar to the material already learned. Baddley (1999) explains the interference effects of similarity emerging from empirical studies as follows: when a person learns a lexical item then tries to learn another one that is highly similar, he will be slower to learn the second item, and in doing so will tend to forget the first to a much greater extent than would have been the case if the two items were unrelated. Several studies have been conducted to investigate the interference phenomenon. Similar to the memory and recall research presented in Chapter 2 (see 2.4.3), all these studies were conducted with adult native speakers, and they were not required to learn new L2 items. Examples of these studies are presented below.

One of the earliest studies was by McGeoch and McDonald (1931) who had their subjects learn a list of adjectives until they could recall them perfectly. Following this, their subjects spent 10 minutes, either resting or learning material varying in similarity to the adjective list (learning 3-digit number, learning nonsense syllables, learning unrelated adjectives, learning antonyms, learning synonyms). McGeoch and McDonald found that the amount of forgetting was lowest when subjects merely rested during the interval, and was somewhat more when they learned unrelated materials (such as three-figure numbers or nonsense syllables) during the interval. Forgetting increased when the subjects were required to learn other adjectives, being greatest when the interpolated learning involved adjectives that were similar in meaning to those originally learned. This result shows the characteristic feature of interference, that the more similar the interpolated learning, the greater the degree of forgetting.

Similarly, Underwood *et al.* (1965) have presented evidence that their subjects learned 12-pair sets of associate–pairs pairing semantically similar English words with letter diagrams, for example, bear-*AA*, lion-*BB*, elephant-CC, etc., with more difficulty than they learned comparable sets of dissimilar associate-pairs like captain-DD, sofa-EE, pistol-FF, etc.

Several similar studies have been conducted to investigate the interference phenomenon. However, all these studies seem problematic for application in L2

learning, as the research in this area was conducted using laboratory studies, i.e., they were not conducted with real language learners who were required to learn new lexical items. These studies, therefore, do not make it clear whether presenting language learners with new vocabulary items similar in their meanings will facilitate or hinder learning in the vocabulary acquisition situation. Baddley (1990) has criticised this "laboratory-only" style of research as losing sight of the ultimate objective: to illuminate practical problems. Similarly, Carroll (1966) asserts that the limited laboratory conditions are by no means identical to the complexities of real situations. Laboratory studies may appear to prove absolute qualities or characteristics which may not be so absolute, given the widely varying contexts within which elements act and interact in the real world.

Underwood (1972: 19-20) illustrates that there are differences between laboratory learning and the learning that has occurred outside the laboratory. He notes that the interference theory formulation was based upon laboratory studies in which the subjects were presented with verbal learning tasks requiring them to make very simple associations, whereas learning outside the laboratory results in memories that are far more elaborate in terms of images, mediators, and organisations and so on. These memories represent a level of encoding very different from the laboratory associations. Baddley (1999: 122) notes that although the negative interference resulting from learning similar items together have been demonstrated in several studies, there is some disagreement as to how important it is outside the laboratory. Along these lines, Di Vesta and Thompson (1970) assert that teachers can minimise the effects of interference by employing effective teaching techniques to make certain that new materials are taught and learned in a thorough and meaningful way.

In addition, the distinctive hypothesis has been referred to (Tinkham, 1993, 1997) in support of the basic hypothesis of the interference theory. Therefore I will discuss in some detail the assumption behind this hypothesis in the following subsection.

3.2.2 The Distinctiveness Hypothesis

The distinctive hypothesis (cf. Hunt and Elliott, 1980; Hunt and Mitchell, 1982) postulates that as the distinctiveness (non-similarity) of information to be learnt increases, the ease of learning that information also increases. For example, Hunt and

Elliot (1980) found that we remember words that are distinctive in their sequence of short and tall letters better than words with a more common orthographic appearance. Tinkham (1993, 1997) referred to the assumption behind the distinctiveness hypothesis in terms of evidence for the negative effects of presenting new semantically related items together to language learners. However, this interpretation neglects a remark made by Hunt and Mitchell (1982) indicating that distinctiveness does not require "stark and obvious contrast" among items, and that words can belong to the same category, but distinctive encoding can be developed through attention to differences between the words. Other researchers (Eysenck, 1979; Jacoby and Craik, 1979) have similarly argued that "distinctiveness" does not refer to differences among new information to be learned, but it actually refers to the establishment of discrimination among the items to be learned.

Interestingly, the notion of the need for careful emphasis on the differences between semantically related words is confirmed by some of the advocates of the semantic approach to vocabulary learning (e.g. Gairns and Redman, 1987) as mentioned in Chapter 2 (see 2.3.4.). It is obvious that researchers referring to the distinctiveness hypothesis as evidence in support of the notion that new lexical items sharing meaning similarity should not be taught together are defining the term "distinctiveness" in a different way from researchers who have actually worked in this area. Moreover, distinctiveness research is concerned with formal not semantic similarities among words. In the following section, I will review the empirical research conducted to investigate the effects of interference on teaching L2 new words in semantic sets.

3.3 L2 Interference Studies

In the following section, I will review nine studies, the only ones I have found in the literature investigating the effects of L2 vocabulary learning in semantic sets.

3.3.1 Higa (1963)

The earliest published research on interference relating directly to foreign language vocabulary was done by Higa (1963). The research involved seven kinds of meaning relationships between pairs of words that were compared with pairs of words that were not related to each other. Higa was interested in determining if any particular

type of semantic pairing actually interfered with learning. He did this by constructing six experimental and one control six paired-associate lists to be learned by the subjects individually: (1) the antonym list (e.g. dark-light), (2) the co-ordinate list (e.g. apple-pear), (3) the free-association list (e.g. bed-sleep), (4) the partial-response-identity list (e.g. man-girl), (5) the synonym list (e.g. fast-rapid) (6) the connotation list (e.g. family-home), and (7) the control list which consisted of unrelated words. Higa used CVC trigrams (made-up words composed of consonant /vowel/ consonant) to serve as the stimulus items and English words to serve as the response items.

The only information given about the subjects (N=72) is that they were paid volunteers from Harvard and Radcliffe universities in the United States. They were divided into two blocks, above and below the median, according to their scores on the Modern Language Aptitude Test (Carroll and Sapon, 1958). Six from each of the two blocks were then assigned randomly to each of the experimental lists. Each person in each group learned one control list (words from the unrelated list paired with trigrams) and one experimental list (words from one of the categories mentioned before paired with trigrams). Half the subjects learned a control list and then an experimental list, while the other half of the subjects learned an experimental list and then a control list.

The lists were presented on memory drums, two seconds with stimulus alone and two seconds with stimulus and responses, and the number of trials to criterion was measured. No other details of the procedures were given by Higa. However, Underwood (1949) gives a description of paired-associate memory research procedures. According to him, when the stimulus is presented, the subject is to call out the response before it actually appears on the memory drum device. Trials to criterion would be the number of trials needed until the subject could give all correct responses for the entire list. The dependent variable was the difference between the number of trials to learn an experimental list minus the number of trials needed to learn a control list.

An analysis of variance showed that the unrelated items in the control list were learned more quickly than synonyms and free-association items; a moderately large, but not statistically significant, difference was also found in favour of the control

words over antonyms. The other three types of pairs were learned slightly more quickly than the control words, but not to a statistically significant degree. Table 3.1 below (adapted from Nation 2000a: 7) ranks the pairs of words of the involved seven kinds of meaning relationships from those that were most difficult to learn to the pairs that were easiest to learn.

Table 3.1: Meaning Relationships between Word Pairs in Higa's Study

Effect of the set	Relationship	Explanation	Example
Most interfering	Near synonyms	The words in the set have rather similar meanings.	*fast* *rapid*
	Free associates	One word is a free associate of the other.	*bed* *sleep*
	Opposites	The words have opposite meanings.	*dark* *light*
Neutral	Unrelated	The two words have no meaning connection.	*bread* *foot*
	Connotation	The two words were not synonyms but close in meaning to each other.	*see* *vision*
	Partial response identity	The words have similar free associated (e.g. light).	*dark* *lamp*
Most helpful	Co-ordinates	The words occur under a headword, such as fruit.	*Apple* *pear*

Surprisingly, no work has been done to check Higa's results for thirty years. To my knowledge, Tinkham (1993) was the first researcher in the contemporary literature to investigate further the interference effects on second language vocabulary acquisition.

3.3.2 Tinkham (1993)

Tinkham (1993) conducted his study with the intention of testing the hypothesis that students of a new language learn their new lexical items more quickly if the items are presented to them in sets of unrelated words rather than in semantic clusters. He conducted two experiments using the same subjects (N=20). The subjects ranged in age from 16 years to the mid-forties and were either native English speakers or advanced second language speakers of English.

In Experiment 1, the instrument was a trials to criterion test of six pairs of words, three of which were semantically related to one another and three of which were not (mixed set). The related words were all kinds of clothes, i.e., they were subordinates of the same superordinate, although the superordinate itself was not used. The six

English words were paired with six artificial words of two syllables each. Tinkham (p.374) followed several guidelines while creating the made-up words to maintain continuity across the two experiments and to decrease the possibility that a particular set of artificial words might be more learnable than the others. For example, all six artificial words had two syllables, three of which received stress on the first syllable, while the others received stress on the second. The word-pairs for Experiment 1 (mixed, related and unrelated) were as follows:

shirt - moshee	rain - achen
jacket - umau	car - nalo
sweater - blaikel	frog - kawvas

The materials were presented to the subjects via a tape recorder. Subjects heard all of the artificial words coupled with their corresponding English words, e.g. "*umau* means *jacket*". Then they participated in a succession of trials presenting the English word, followed by a 3-second pause, the sound of a bell, and then the artificial word. Subjects were required to say the artificial word during the pause. Each subject took the test individually and orally. They had to respond to all the words in the list correctly, and the number of trials it took to reach that point became the dependent variable.

A multivariate analysis of variance (MANOVA) revealed that unrelated words required fewer trials to criterion than did related words $F(1,18) = 22.5, p < 0.001$. In other words, the subjects learned the semantically related English words with artificial words more slowly than they learned the unrelated English words with artificial words.

Tinkham's second experiment used the same subjects and data collection procedures as Experiment 1, but different materials. Two lists of six words each were prepared: one of semantically related words and the other of unrelated words (separate sets). The words were related by being kinds of fruit. The word-pairs for Experiment 2 (separate, related and unrelated) were as follows:

pear - okess	mountain - awnai
apple - nuga	shoe - tosel
apricot - beloot	flower - manzeek
plum - kaisher	mouse - kunop
peach - eckly	sky - efoo
nectarine - depai	television - chengee

Again the application of MANOVA revealed that unrelated words required fewer trials to criterion than did related words $F(1,16) = 22.8, p < 0.001$.

A brief post interview was conducted with each of the subjects. They were asked about which type of sets was the hardest to learn. Tinkham stated that almost all of the subjects responded that the semantic set was difficult to learn. The reasons given for that were either they could not think of any mnemonic word associations for the words or that the difficulty was due to the similarity of the words.

As Tinkham's findings were against the generally accepted opinion (see Chapter 2) that learning words in semantic sets benefits rather than interferes with learning, another researcher, Waring (1997) replicated Tinkham's study to check his findings.

3.3.3 Waring (1997)

Waring's study followed Tinkham's procedures and materials very closely. He conducted two experiments using the same subjects (N=20). 18 of the subjects were native speaking Japanese and the remaining two were non-natives with advanced proficiency in Japanese. The twenty subjects were required to learn six word-pairs in Experiment 1. The word-pairs were Japanese nouns matched with imaginary words. Three of the words were semantically related to one another, and the other three words were not (mixed set). A trials to criterion test was administered to determine which of the two sets was learned completely, before the other set: the related or the unrelated. The subjects also took the test individually and orally. They had to respond to all the words in the list correctly, and the number of trials it took to reach that point became the dependent variable.

Similar to Tinkham's findings, a multivariate analysis of variance (MANOVA) revealed that unrelated words required fewer trials to learn than did related words $F(1, 18) = 18.9, p < 0.01$.

Experiment 2 consisted of two sets of six word pairs (separate sets): one of related words and one of unrelated words. The same subjects and procedures were used as in Experiment 1. The results indicated that the related words took significantly more time to learn than did the unrelated words F (1,16) = 9.3, $p < 0.01$, which again replicated Tinkham's findings.

3.3.4 Sugiyama (1996)

In this study, Sugiyama investigated whether the subjects could learn six semantically unrelated Indonesian words, whose English equivalents are: *hot*, *understand*, *room*, *lover*, *tired*, and *cheap*, more easily than three pairs of Indonesian adjective opposites (*big/small*, *heavy/light*, *tall/short*). The subjects were 22 Japanese native speakers, who ranged in age from 20 to 56. They had no prior knowledge of Indonesian. The researcher used two sets of flash cards: one set consisted of the Indonesian opposites, and the other set consisted of the semantically unrelated Indonesian words. On each of the cards, an Indonesian word was written.

Sugiyama presented the three pairs of opposites by showing the subjects the flashcards and giving the meaning of each word in Japanese. This presentation was repeated three times. After watching and hearing the presentation, the subjects were engaged in ordinary class work for 20 minutes. They were then given a multiple choice test (immediate) in which they were given the Indonesian words followed by their Japanese translations and asked to write the Japanese translation next to each Indonesian word. After finishing the test, the subjects moved on to class work for an hour, then they were presented with the unrelated words in the same fashion as the opposites. Again, they were involved in class work for 20 minutes. They were then asked to complete a multiple choice test. A week later the subjects were asked to complete the tests again (delayed) without any representation of the vocabulary items. Analysis of the subjects' responses indicated that in both immediate and delayed tests, more mistakes were made in tests of semantically related words than were made in tests of semantically unrelated words.

3.3.5 Arai (1996)

Arai (1996) conducted a case study using her two children as the subjects to explore the effects of learning words in semantically related and unrelated sets. The subjects of this study were a 10-year-old boy and a 7-year-old girl. Both were Japanese native speakers. Four sets of English nouns were prepared for the study, each constructed of nine items. The length of the words was balanced in the four sets. There were two sets of semantically related items: one set included names of animals, and the other included kitchen tools. The other two sets consisted of unrelated items.

Black-ink pictures drawn on small white cards representing vocabulary items in the four sets were used for both teaching and testing. The Japanese word for each item was written next to the pictures. The cards of each set were randomly displayed and the name of each item was given in English orally only once. The placement of cards was then slightly changed, and the subjects were asked to listen to an English word randomly selected from the set, and to point to the picture which was thought to present the item. If the item was identified correctly, the card was withdrawn from view. If it was incorrectly identified, the card was saved again. If the second attempt also resulted in an incorrect response, the word was repeated and the corresponding picture pointed out and withdrawn from view. The teaching and testing were conducted individually. All trials were tape-recorded. Three days later the subjects were tested again to check for changes in performance over time. Without the researcher's reviewing of any of the vocabulary items, the subjects were asked to identify the items after listening to their names.

In terms of scoring the data, only items identified correctly on the first attempt were counted as correct responses. Quantifying the girl's responses revealed that her best performance in the immediate and delayed tests was with the semantically related set of animals, and her worst performance was with the semantically related set of kitchen tools, as she identified fewer items from the kitchen set than from the unrelated sets during the immediate and delayed tests. Quantifying the boy's responses in the immediate and delayed tests revealed that he did better with the sets of unrelated items in the immediate tests. However, he identified more items from the semantically related sets in the delayed test.

3.3.6 Petersen (1997)

Petersen (1997) conducted two studies in his doctoral research to discover if grouping new foreign language words into semantic sets might be detrimental to learning. Originally 132 subjects agreed to participate in the study, however due to absenteeism, the final statistical analysis was conducted for 88 subjects. They were all first-year Japanese students in an English Department in a college in Japan. In Study 1, the materials consisted of a computer programme guiding the subjects while learning one of two lists of vocabulary. List 1 consisted of six Japanese-English pairs of words which form a semantic set. As in the studies of Tinkham (1993), Arai (1996), and Waring (1997), the words in the semantic set were subordinates of the same superordinate, which in this case was "birds". List 2 consisted of six Japanese-English pairs of words that were unrelated to each other. All the words were nouns of one, two, or three syllables. The English words in the two lists were as follows:

List 1	**List 2**
crane	mantis
falcon	orchid
ostrich	parakeet
parakeet	planet
parrot	trial
rooster	vacuum

Petersen assigned the students randomly to the two treatment groups. The experiment was conducted in two phases: the treatment and the post-test. The treatment took place on a Friday, and the post-test took place on the following Monday. In the treatment phase, the English word was presented to the students on a computer screen and after one second its Japanese translation appeared after it. After a delay of three seconds, the next word appeared. The computer went through all six words in the list in this manner. Then the computer entered a testing mode. An English word appeared on the left side of the screen and a list of all the Japanese words in the list appeared on the right. The student had to choose the Japanese word that corresponded to the English word by clicking on it. If the answer was correct, the computer randomly shuffled the list of Japanese words and presented the next English word. This process continued until the student had accurately chosen the correct Japanese word for all the words in the English list. The computer recorded the number of cycles that a student required before he or she could answer correctly for

all six words. This became the first dependent variable. The second phase consisted of two post-tests for each treatment: a fill-in test in which the subjects were required to provide the Japanese translation for the English words, and a matching test in which they were required to match the English words with their Japanese translation. Both tests were administered two days after the initial learning phase. These tests became the second and third dependent variables.

A multivariate analysis of variance (MANOVA) showed that grouping words in semantic sets did cause greater learning difficulties when the measure of learning was the number of repetitions needed to perfectly memorise a list of native language-foreign language word pairs. The group learning a semantic set required more repetitions to score perfectly F (1, 86) = 27.732, $p < 0.01$. However, when the measure was a post-test requiring the subjects to write the native language word when presented with the foreign language word, grouping words in semantic sets proved to facilitate retention. The semantic set group remembered statistically significantly more words F (1, 86) = 7.944, $p < 0.01$. This means that even though the group which learned words in semantic sets had more difficulty in learning the words since they took more cycles through the word list before they could answer correctly for all words, they remembered their words better than the group learning unrelated words.

In Study 2, the same subjects, procedures and computer program were used. However, two new word lists were constructed, each containing 10 pairs of words. The first list was made up of two semantic sets of professions and insects, and the second list included unrelated words. The English words in the two lists were as follows:

List 1	**List 2**
cicada	ambulance
cricket	birch
flea	cactus
termite	centipede
wasp	measles
optician	otter
pharmacist	snail
plumber	stapler
surgeon	stethoscope
surveyor	surveyor

The analysis of the results of Study 2 failed to show any differences between the group that learned the semantic set and the one that learned the unrelated set. The interpretation attributed to this result was that neither group had more difficulty in learning the words than the other. Petersen suggested that the conflicting results of his studies were due to the length of the word lists, as Study 1 used six-word lists, and Study 2 used ten-word lists. Petersen concluded that grouping words in semantic sets causes problems only for initial learning of short lists of words, but not for longer lists.

All the aforementioned studies were interested in comparing the effects of learning new L2 vocabulary items in semantic and unrelated sets. Only one study, conducted by Tinkham (1997), has investigated the effects of learning new vocabulary items in thematic sets.

3.3.7 Tinkham (1997)

The 1997 investigation by Tinkham examined the effects of presenting new L2 vocabulary items in semantic, thematic, and unrelated sets upon learning new L2 vocabulary items. His research consisted of two experiments sharing the same subjects and similar procedures. The subjects (N=48) were psychology students at an American university. They participated in the study in order to fulfil a requirement for a class they were taking. All the subjects were native speakers of English.

Experiment 1 consisted of four studies, two conducted in the oral modality, and two conducted in the written modality. Of the two studies conducted in a particular modality, one study required recognising new artificial words and the other involved recalling artificial words when given their English meanings. The purpose of each study was to compare, by the independent variable "condition", the learnability of three-pair sets of associate pairs pairing English and artificial words. Tinkham (1997: 143) classified the four conditions as follows:

- Condition 1: linguistically related sets "semantic clusters": words of the same form class which directly descend as co-ordinates under a common superordinate concept.

- Condition 2: linguistically unrelated sets: words of the same form class which do not directly descend from a common superordinate concept.
- Condition 3: cognitively associated sets "thematic clusters": words of different form classes that are associated with a shared thematic concept.
- Condition 4: cognitively unassociated sets: words of different form classes that are not associated with a shared thematic concept.

Materials for the four studies consisted of two trials to criterion tests each involving a six-pair set of associate pairs linking an English word with an artificial word. Each six-pair set included three English words from one condition and three from the opposing condition (mixed). The English words, arranged by condition, were:

Condition 1, semantic clusters		**Condition 2, unrelated sets**	
dish	shirt	acid	island
bowl	jacket	smoke	potato
plate	sweater	roof	beard
Condition 3, thematic clusters		**Condition 4, unassociated sets**	
beach	library	fork	triangle
sunny	whisper	count	improve
swim	quiet	brave	sweet

Tinkham used similar data collection procedures to the ones he used in his 1993 study (see 3.3.2 above), except that in the written modality studies, the tests were administered visually via a computer rather than orally via tape-recorder. The subjects first saw a list of the word-pairs for a period of 20 seconds. The subjects then saw, one by one, the artificial words from the list and were allowed five seconds to type the corresponding English words. Each subject was required to hear and recognise the artificial words and say or type the corresponding English word on two of the tests and hear the English words and recall (say or type) the corresponding artificial word on the other two tests. Thus "task" was considered an independent variable.

A multivariate analysis of variance (MANOVA) revealed that a significant difference was found between conditions 1 and 2, $F(1, 44) = 57.83, p < 0.001$, with the semantic cluster requiring more trials to reach criterion than the unrelated set. A significant difference was also found between conditions 3 and 4, $F(1, 44) = 14.50, p < 0.001$,

with the thematic cluster requiring fewer trials to reach criterion than the unassociated set.

The subjects, procedures, and design for Experiment 2 were the same as those for Experiment 1, except that the materials were different. While in Experiment 1, the six-pair sets included a mixture of three English words representing one condition and three representing another, in Experiment 2, each six-pair set represented only one condition (separate). The English words included in Experiment 2, arranged by condition, were:

Condition 1, semantic clusters		**Condition 2, unrelated sets**	
tin	apple	cigar	paint
bronze	pear	wolf	funeral
iron	nectarine	lace	recipe
brass	peach	stone	market
lead	apricot	chain	uncle
steel	plum	fuel	ice

Condition 3, thematic clusters		**Condition 4, unassociated sets**	
frog	cave	cloud	hill
hop	explore	erase	behave
slimy	dark	social	stubborn
pond	stalactite	office	menu
croak	drip	lose	serve
green	cool	risky	brief

Application of a MANOVA revealed that a significant difference was found between conditions 1 and 2 (semantic cluster vs. unrelated set), $F\,(1,40) = 89.35$, $p < 0.001$, indicating that the semantic cluster required more trials to reach criterion than the unrelated set. There was also a significant difference between conditions 3 and 4 (thematic cluster vs. unassociated set), $F\,(1,40) = 20.28$, $p < 0.001$, showing that the thematic cluster required fewer trials to reach criterion than the unassociated set.

Following the completion of the tests, Tinkham's subjects were asked to identify the sets they found most difficult and easy, and the reasons why. Tinkham (p.159) stated that the vast majority of the subjects identified the thematic cluster as the easiest set to learn although some identified the unrelated set and a few identified the unassociated

set. Moreover, most of the subjects felt that the semantic cluster was more difficult than the others.

3.3.8 Schneider *et al.* (1998)

Schneider *et al.* (1998) conducted a study to investigate the effects of interference on acquisition and retention of foreign language vocabulary. The subjects were 84 non-French speaking college students participating for credit in a course on introductory psychology. They were required to learn the association between French words and their English equivalents, with the words either blocked by category, i.e. the words can be classified under a common superordinate, or in a mixed order, i.e. including words from different categories. 25 French-English word-pairs were presented to the subjects on a computer screen in blocks of five, at the rate of 2 seconds per pair. After a given block was presented, the subjects saw the five French words one at a time, and were asked to type the English equivalent.

Subjects participating in the blocked-order acquisition phase were given five related words in each group: body parts, kitchen utensils, vehicles, food, and clothes. For example, the clothes group included *manteau*, *coat*; *chemise*, *shirt*; *chaussures*, *shoes*; *cravate*, *tie*; *jupe*, *skirt*. For participants in the mixed-order acquisition phase, the words in each group were unrelated as they included words from each of the five categories. For example, one group was *dos*, *back*; *avion*, *aeroplane*; *assiette*, *plate*; *jambon*, *ham*; *chemise*, *shirt*.

After the participants correctly responded to all 25 words, they saw all of them again one at a time and were asked to type in the corresponding English word. The dependant variables were the number of errors (out of 25 possible) and the total response time. The time was measured from the onset of the stimulus until the participant typed the response word followed by the "return key". One week later, the same participants took the same test again, and then repeated the acquisition phase to assess ease of relearning.

The findings indicated that the subjects in the blocked-order acquisition condition made fewer errors than those in the mixed order acquisition condition during learning, but the opposite was found during relearning (i.e. participants in the mixed-order

acquisition condition made slightly fewer errors than those in the blocked order acquisition condition). Moreover, although blocking vocabulary by category aided initial acquisition, it appeared to hinder the subjects' performance in the retest conducted a week after the learning session. This means that, initially, learning related words together was easier than learning a set of unrelated words. Yet, on a long-term retention test and in subsequent relearning, the unrelated words were easier to remember.

3.3.9 Finkbeiner and Nicol (Forthcoming)

The purpose of the study was to explore whether grouping lexical items into semantic sets will affect learners' performance on a translation task once the items were learned. 47 subjects initially participated in the study, however, data from 23 subjects were excluded from analysis because of their high error rates. The subjects were undergraduate university students and all of them were native speakers of English. 32 artificial words were created and each was paired with a picture of a familiar concept. The 32 words constitute four categories, namely, animals, kitchen utensils, furniture, and body parts.

Each session conducted with the subjects included: (1) vocabulary training followed by (2) a recognition task, and then (3) a translation task in each direction (L1 to L2 and L2 to L1). During training, the subjects first heard a recording of the L2 word over headphones, then saw the L2 word and its corresponding picture on a computer monitor, then heard a second recording of the L2 word. In the "related" training condition, semantically related items were blocked into groups of eight as in the following example:

cat - birk
cow - gorp
dog - floop
elephant - glip
horse - larpell
lion - treffim
pig - ploozette
tiger - walloon

Half of the artificial words for each category were one syllable in length, while the other half were two syllables in length. In the "unrelated" training condition, all 32 items were presented randomly to the subjects in groups of eight.

The vocabulary training was followed by a recognition task, which consisted of the presentation of a picture followed by one of the L2 labels. Half of the picture-label pairs was correct (the picture was paired with its right label) and the other half was incorrect (the picture was paired with the wrong label). The subjects were instructed to press a "yes" button if the picture and L2 word matched and a "no" button if they did not. Participants were given feedback for each item, including whether they were correct or not, as well as their reaction times.

After the recognition task, the participants were given the translation task. In this task, in the L1 to L2 blocks, an English word appeared and the subjects were asked to speak the L2 translation equivalent into the microphone as quickly as possible. In the L2 to L1 blocks, they were asked to give the L1 translation of the artificial words. Their vocal response trigged a voice key, stopping the computer's timer. All incorrect responses as well as fluency errors like stuttering were counted as errors. An analysis of variance (ANOVA) indicated that the subjects were significantly slower to translate words learned in semantic sets compared to the subjects who learned the same words in random order F (1,20) = 7.46, p = 0.013. This was the case in both translation directions.

3.4 Limitations of L2 Interference Studies

In this section, the limitations of the L2 interference studies presented above will be discussed in 3.4.1-3.4.5 to consider the generalisability of the results obtained to second language vocabulary learning. These limitations relate to the incompatibility of the findings, the learning materials, the participants, the learning and testing methods, and the lack of contextualisation and practise opportunities.

3.4.1 Incompatibilty of the Findings

The above review of L2 interference studies reveal the incompatibility of their findings, as their results seem in conflict with each other, sometimes this occurs within the same study (see 3.3.4 and 3.3.5). While the findings of the studies

conducted by Tinkham (1993, 1997), Sugiyama (1996), Waring (1997), and Finkbeiner and Nicol (forthcoming) indicated that learning semantically related words was more difficult than unrelated ones, Higa (1963) found co-ordinate items to be helpful. As shown above, the semantic sets in Tinkham's and Waring's experimental lists were composed of lexical items falling under a common superordinate. In Higa's study (see 3.3.1), by way of contrast, he used six pairs of words from six different sets in each experimental list, for instance, the co-ordinates list was composed of *hour*, *minute*; *hammer*, *saw*, and so on. This means that we can hardly describe this list of being composed of related words, as *hammer* has no semantic ties with *minute*. Nation (2000b) suggests that this might be the reason why Higa's results do not support Tinkham's and Waring's. On the other hand, Schneider *et al.* (1998) (see 3.3.8) gave evidence that presenting words in semantic sets actually facilitated immediate retention but negatively affected long retention. Petersen's study showed conflicting results. The results of the first experiment in his study showed that grouping words in semantic sets caused greater learning difficulties when the measure of learning was the number of repetitions needed to perfectly memorise a list of native language-foreign language word pairs. However, when the measure was a post-test requiring the subjects to write the native language word when presented with the foreign language word, grouping words in semantic sets was found to facilitate retention. When longer word sets were used in the same study, Petersen failed to show any differences between the subjects learning a semantic set and the subjects learning an unrelated set. Similarly to Petersen, Arai's study showed conflicting results. It is clear that the experimental results in the interference area are not yet sufficiently conclusive.

3.4.2 Learning Materials

There are three limitations concerning the learning materials used in these studies. The first one concerns the use of artificial words. In the majority of the studies, artificial words were used to stand for L2 lexical items. This might be considered a positive feature, in that it could lead to an increase in the validity of the experiments by ensuring that the subjects have never encountered the target words before (Nation, 2000a). Further, using artificial words allows the researchers to counterbalance effects for word shape (see 3.3.2). Nevertheless, using nonsense words, instead of L2 real words, restricts the generalisabilty of the studies in that they only hold true for

meaningless words, and not for meaningful words of natural languages. This (I believe) reduces the validity of the experimental results in terms of their application to natural language learning (Yang, 1997). Meara (1996), too, asserts that data gained from studies using artificial words are rather limited to allow general conclusions about learning foreign vocabularies, as different languages present quite different learning problems to individual learners. Therefore, it might be acceptable for Petersen (1997), as an example, to draw conclusions for learning English as a second language, as he used real English words in his study. Similarly, Schneider *et al.* (1998) can make recommendations concerning learning French as a second language. However, it is rather difficult for researchers using nonsense words to make statements about L2 vocabulary acquisition. An additional point raised by Yang (1997) is that using artificial words negatively affect the participants' motivation. Papagno *et al.* (1991) argue that subjects seem more motivated to learn words from a natural language, even if they have no apparent need ever to use it in real life. This might affect the results of the studies in which artificial words are used, since motivation to learn is an important factor in successful vocabulary learning (Thornbury, 2002).

The second limitation concerning the learning materials is the number of vocabulary items which the subjects were required to learn in these studies. The materials in all the studies except in those of Schneider *et al.* (1998) and Finkbeiner and Nicol (forthcoming) were composed of a very limited number of words. Nagy and Herman (1987), echoed by Meara (1996), assert that testing the learning of a limited number of words does not validate a particular study nor lead to the formation of a cornerstone of data in the field. As noted earlier, In Petersen's (1997) study, he found significant differences between semantic and unrelated words when he used smaller groups of words. It might be the case that with larger groups of words, the advantage of learning unrelated sets of words might disappear or even be reversed. This might suggest that we can only draw cautious conclusions from L2 interference studies which use a limited number of target words.

A third potential weakness in some of the studies (i.e. Sugiyama, 1996; Tinkham, 1997) is the confounding of part of speech with treatment. In Sugiyama's (1996) study, the related words group included adjectives, and the unrelated words group had

a mixture of adjectives, nouns, and verbs. Similarly, in Tinkham's (1997) study, the semantic and unrelated sets included nouns, whilst the thematic and associated sets included a mixture of nouns, adjectives and verbs. Parts of speech has been considered a factor affecting the difficulty of vocabulary learning (Laufer, 1997) and thus, one might argue, affects the findings of these studies.

3.4.3 Participants

I identify three limitations in relation to the participants in L2 interference studies. Firstly, the subjects in all of the studies except Petersen's (1997) are "naive", in the sense that they had no prior experience of the language to which they were exposed to in the experiments. Higa (1963), Tinkham (1993, 1997), Waring (1997) and Finkbeiner and Nicole (forthcoming) used artificial words, whereas Sugiyama (1996), Arai (1996), and Schneider *et al.* (1998), used subjects with no experience with the natural language of the target items. Both Meara (1980, 1996) and Read (2000) consider this a serious limitation, because it means that these experiments deal in effect only with the very earliest stages of learning a language. Learning words in a language that the subjects are wholly ignorant of is quite different from learning new words in a language they know moderately well. In these later stages a learner will already have developed a good sense of the formal aspects of words in the second language. Further, morphological information and comparisons with known words of similar meanings may make it easier to acquire the L2 word. Moreover, as Waring (1997) notes, when exposed to new words, beginner learners have to set up new semantic sets in the L2 into which the words must be classified, while an intermediate learner would probably already know many of the words from the semantic group and when presented with new words may only need to add the new words to an existing set, rather than creating a new one from scratch. This would obviously restrict the way the results of these studies can be applied to the learning of new vocabulary items for intermediate and advanced learners.

Secondly, the subjects in all the L2 interference studies, except that of Petersen (1997), had no vested interest in performing well in the experiments; they had nothing to gain. As mentioned above, the participants in these studies were not real language learners in the course of learning a language, but only subjects prepared to take part in

a small number of experimental sessions, and had no prior knowledge of the language to which the target words belonged.

Thirdly, the number of subjects used in these studies, except in that of Petersen (1997) and Schneider *et al.* (1998), was very restricted. According to Meara (1996: 6), there are large individual differences in the way people handle words. Thus, the number of subjects should be large enough "to iron out the variation due to individual differences".

3.4.4 Learning and Testing Methods

The learning methods used in the majority of the aforementioned studies are described by Meara (1996) as "highly- restricted". What was measured in these studies was the number of trials, or the total time required to learn the different word lists. Thus the learners were allowed no flexibility in their learning. Waring (1997) admits that there are limits on the trials to criterion method whereby a condition was met when all words in a set had been produced correctly in one trial. The experimental design in these types of studies was described by Waring (ibid.) as stressful for the subjects as they were constantly under time pressure. Further, the paired associate trials to criterion technique does not closely resemble the way that most people learn L2 vocabulary, and so the external validity of these studies can be questioned, i.e. how far these research findings can be applied to other contexts (Seliger and Sohamy, 1989).

A further limitation with regard to the learning methods is the interpretations one can generate from the results of these studies. In these studies, the number of learning trials to reach a predetermined learning criterion was recorded and it has been shown, in some of the studies, that participants take longer to learn new labels for sets of semantically related items than for sets of semantically dissimilar items. What is not clear from these studies, however, is under which condition participants learn the words better. It may be, as asserted by Finkbeiner and Nicol (forthcoming) that learning semantically related words takes longer, but that words learned under these conditions are learned better in terms of actual language use. That is, the very difficulty associated with learning the new words may make them easier to process once they are learned. Similarly, Schneider *et al.* (1997: 82) assert that " the method

that leads to the fastest way to learn something is not necessarily the best method for retaining the learned information". This takes us to the question of retention. It is customary in the literature to distinguish between "learning" which involves the immediate recall of new words, and "retention" which refers to their recall over a period of time. Most of L2 interference studies looked solely at learning. However, learning in a classroom situation is seen as encompassing not just the immediate recall of something, but the ability to recall it over a period of time. Thus, it could be argued that looking at retention is more important than investigating immediate learning.

3.4.5 Lack of Contextualisation and Practise Opportunities

As mentioned earlier (see 3.2.1), several writers (e.g. Di Vesta and Thompson, 1970; Underwood, 1972; Baddley, 1999) assert the possibility that interference effects might be reduced or eliminated in learning that occurs in real learning situations when effective teaching methods are employed and new materials are taught and learned in a meaningful way. Waring (1997) notes that there seems to be limits on interference itself and that interference might depend on the type of material provided for the subjects. Along these lines, Haberlandt (1994: 211) notes that when meaningful passages are used rather than lists of words and nonsense syllables, this might overcome interference effects, as forgetting only occurs when subjects have to learn single items. In all the previous studies, the subjects were given lists of isolated words. Thus the results of these studies may not hold for words presented in sentences or texts.

Although context has been debated (cf. Nation, 1982; Laufer and Shmueli, 1997), various writers and researchers (e.g. Nagy and Anderson, 1984; Stahl and Fairbanks, 1986; Stoffer, 1995; Zimmerman, 1997; Coady, 1997; Hulstjin, 1997) have emphasised the importance of presenting new words in context. Jullian (2000) asserts that the use of illustrative sentences helps to depict the semantic content of the words by means of association with images, and thus record their meaning more firmly in the learners' minds. Stevick (1976: 30) believes that the reason vocabulary is easier to learn in context than in isolated word lists is that such meaningful contexts permit more complex and deeper processing. Along the same lines, Laufer and Shmueli (1997: 91) note that "context contributes to elaborate processing of a word and

provides a cognitive foothold, which in term reinforces memorisation". Furthermore, Finocchiaro (1986) and Nagy (1997) assert that what a word means is mediated by the context in which it is used. Words become meaningful only when studied and considered in context, that is, with all other words which surround them and help in giving them their meaning. EFL course designers and teachers, as asserted by Nation (2000b), widely accept the notion that vocabulary items should not be presented in isolation to L2 learners, thus a common practice in L2 learning classrooms is to contextualise new vocabulary items while presenting them. Therefore, one can argue that vocabulary list learning of the type used in L2 interference studies bear little resemblance to vocabulary acquisition in second-language learning as new vocabulary items are usually contextualised to L2 learners.

New words are not only often contextulised in real classroom situations, but the presentation of new words also tends to be followed by some sort of exercises or activities which involve a deeper engagement with the words. It is often stressed throughout the literature that the more cognitive energy a person expends when manipulating and thinking about a word, the more likely it is that he will be able to recall and use it later (Shmitt and McCarthy, 1997). This idea was first formalised as the Depth (or Levels) of Processing Hypothesis (Craik and Lockhart, 1972; Craik and Tulving, 1975). This hypothesis states that mental activities which require more elaborate thought, manipulation, or processing of a new word will help in the learning of that word. Craik and Lockhart assert that the deeper the decisions a task forces upon a learner, the more superior the level of retention and recall. Therefore, they argue that the chance that some piece of new information will be stored in long-term memory is determined by the shallowness or depth with which it is initially processed.

Similarly, psychologists have associated better learning with depth of processing, degree of evaluation, and quality of attention to information (Anderson, 1995; Baddeley, 1997). Moreover, there is growing empirical evidence suggesting that retention of information depends on the nature of information processing (Hulstijn, 1992; Luppescu and Day, 1993; Knight, 1994; Newton, 1995; Hulstijn *et al.*, 1996; Paribakht and Wesche, 1997). According to the assumption that retention of a certain item depends mainly on the extent to which it is processed, one might argue that if L2

interference studies had allowed the learners to practice the target words presented in semantic sets, they might have resulted in completely different findings.

3.5 Bringing the Two Views Together

In this chapter and the previous one, I have attempted to present the tensions evident in the literature between one group of researchers and writers who recommend the sequencing of vocabulary items according to meaning similarity, and another group who assert the disadvantages of such an approach, on the grounds that teaching semantically related words together actually hinders the learning of these words as a result of interference. As has been illustrated in Chapter 2, the advantages of teaching semantically related words together are frequently asserted throughout the literature (see 2.2). Moreover, the advocates of the semantic approach to vocabulary sequencing usually refer to the semantic field theory and the findings of L1 psycholingistic studies that bear on the organisation of the mental lexicon. Their claim is that since words can be analysed into semantic fields (see 2.3) and the mind uses semantic similarity in classifying words in the memory (see 2.4), it follows that words should be taught in semantic sets.

However, my analyses of these claims provided in the previous chapter (see 2.3.4 and 2.4.1-2.4.3) have highlighted several issues in relation to the assumption that semantically related words are best taught together. Firstly, there is hardly any empirical evidence in support of this assumption. As mentioned above (see 3.2) textbooks writers who tend to sequence semantically related words together are accused of choosing the easiest way for constructing textbooks, instead of trying to devise realistic situations in which words are used because they are imperatively needed (West, 1956). Further, the decision to teach words in semantic sets seems to be based on intuition rather than empirical evidence (Waring, SLART-L: 2001; Waring, SLVA: 2002).

Secondly, the success of the semantic field theory in terms of identifying relationships that hold between the lexical items in a particular language does not mean that it is necessarily an effective means of organising a good language teaching programme, and that it will lead learners to acquire and retain vocabulary in the most efficient way. The advocates of the semantic field approach to vocabulary learning have failed

to establish a relationship between the organisation of words into semantic fields and the effects on lexical retention and retrieval. Obviously, this can only be established via empirical studies.

Thirdly, if the L2 mental lexicon does use semantic similarity in classifying words, then one can suggest that teaching vocabulary through meaning relations should be the best way to give organised access to the lexicon. However, as has been illustrated from the review of the literature in the previous chapter (see 2.4.1), this issue is far from settled. Meara (1996) notes that very little research has been addressed to this question: what does a L2 learner's mental lexicon look like, and how is it different from the mental lexicon of a monolingual native speaker? Norman (1982: 46) asserts that although semantic networks provide a way for representing relationships among the concepts in a memory system, they are just hypothesis, not fact. As we do not have a clear idea about how L2 learners organise vocabulary items in their mental lexicon, we cannot simply generalise conclusions from L1 studies to the L2 learning context. What is needed are studies investigating the mental lexicon of L2 learners to gain insights into how L2 learners actually register vocabulary in memory: by sound similarities, meaning similarities or both depending on their level of proficiency. Only then we can suggest the most appropriate method by which vocabulary should be sequenced to L2 learners. Even if there is evidence suggesting that the mental lexicon is organised according to meaning similarity, this does not automatically mean that semantically related words should be taught together. What is needed is empirical evidence indicating the effects of different methods of vocabulary sequencing on vocabulary acquisition.

In this chapter I have attempted to present the opinions of authors who write about vocabulary development from a pedagogical perspective (e.g. Nation, 2000a) and researchers (e.g. Tinkham, 1993, 1997) suggesting that presenting lexical items sharing semantic features actually hinders learning. Although they often accuse textbook designers and teachers adopting the semantic approach to vocabulary sequencing of depending on their intuition rather than empirical evidence, I believe that their approach is quite similar, as they often refer to their own personal experiences as teachers and learners regarding confusing lexical items with similar meanings (see 3.2).

In contrast with lack of empirical studies supporting the semantic approach to vocabulary sequencing, there are a number of L2 studies (see 3.3) indicating that semantically related words are more difficult to learn than unrelated ones. However, as illustrated above (see 3.4), these studies are very limited in their number with major criticisms directed against them. Waring (SLART-L, 2001) asserts that these empirical studies are not enough to prove an instructional paradigm. Further, all the majority of these studies show is that learners take more time to learn semantically related words than learning unrelated words (see 3.4.4).

What raises further doubt regarding the assumption that teaching words in semantic sets causes their learning to be more difficult is that the advocates of this assumption usually refer to the interference theory which was generated only from laboratory studies as discussed earlier (see 3.2.1). There is no evidence that this phenomenon actually appears in real classroom situations in which vocabulary items are usually contextualised and practised (see 3.4.5). Moreover, I believe that the distinctive hypothesis also quoted by the opponents of teaching words in semantic sets is misinterpreted (see 3.2.2). As noted above, distinctive research is interested in formal, not semantic similarities among words. Further, researchers interested in the "distinctiveness" area are actually concerned with discrimination among the items to be learnt, not with the differences among them.

From the above discussion, it is obvious to me that there is no clear direct evidence to support the claims and counter-claims on either side. Selection of the way in which vocabulary items might be presented and sequenced to the learners should be chosen on a principled basis, and should be a matter of solid evidence not of mere opinion. Clearly, there is much work ahead in this area, and several issues need further systematic investigation. The research in this dissertation attempts to explore some of these issues as will be illustrated in Chapters 5 and 6.

3.6 Summary

In this chapter, I have presented the views of the opponents of the notion that semantically related words are better learned together and the way that this position has been justified. I have outlined the assumptions behind the interference theory and the distinctiveness hypothesis that are often quoted as a justification for the negative

effects of teaching semantically related items together; and I have also drawn attention to the various shortcomings behind these assumptions. Further, I have reviewed the work of researchers who have attempted to investigate the effects of interference on L2 vocabulary learning, and I have highlighted the limitations of these studies that restrict the relevance of their findings to L2 vocabulary contexts. Finally I have argued that there is currently inconclusive evidence that sequencing new L2 words according to meaning similarity either helps or hinders learning these words. In the next chapter, I will refer to different approaches to EFL textbooks organisation, in order to highlight the method by which new vocabulary items are often sequenced in each approach.

Chapter Four

Vocabulary Sequencing in Different EFL Textbooks

4.1 Overview

In this chapter, I argue that decisions by curriculum writers to present new words to L2 learners in a certain sequence is motivated, in part, by the writers' adoption of different approaches to L2 development. Therefore, in this chapter I will attempt to present and analyse the underlying organisation principles, i.e. different units of progression in different EFL textbooks in order to highlight the methods by which new L2 lexical items are often sequenced in these textbooks.

4.2 Vocabulary Selection and Sequencing in EFL Learning Materials

Vocabulary selection is defined by Halliday *et al.* (1964: 190) as the deliberate choice, for teaching purposes, of particular sets of words, and the consequent deliberate rejection of others. A number of criteria on which selections have been frequently based are: frequency, range, availability, coverage, and learnablity (Mackey, 1965). Once an inventory of teaching items has been arrived at according to the criteria of selection, it must be arranged in a way suitable for practical teaching purposes. The process of ordering the language for teaching is usually referred to as "sequencing".

Lexical sequencing is defined by Nation and Newton (1997) as the grouping and ordering of words within a set of lessons. Nation (2000b) notes that one of the most important decisions concerned with content and sequencing is deciding on the unit of progression. Course designers decide the unit of progression according to the approach to second language development they are adopting: this might be lexical items, grammatical structures, functions, notions, topics, situations, or tasks. As will be illustrated in the following sections, the process of vocabulary sequencing depends to a great extent on this unit of progression, i.e. what marks progress through a course. The following is a brief discussion of the sequencing of lexical items in textbooks using different units of progression.

4.2.1 Structurally-based Textbooks

Some textbooks use "grammar" as the unit of progression, with each lesson dealing with a new grammatical feature. They generally begin with verb "to be" and move on to "present continuous" before contrasting it with the "present simple". The main

thrust of a grammatical syllabus is to compare and contrast different verb features (Fish and Dudley-Evans, 1982).

In a grammatically-based textbook the lexical content is determined in accordance with the need for it to help illustrate the grammatical patterns presented. Tinkham (1993, 1997) and Thornbury (2002) note that when words are being introduced to support a specific grammar structure, words belonging to the same semantic set are more easily slotted into the structure than words chosen more randomly. Tinkham gives examples from two structurally-based textbooks: *Side by Side, 1* (Molinsky and Bliss, 1989) and *New Horizons in English 1* (Walker, 1991). Within a unit titled "Simple Present Tense", the names of all seven days of the week are presented as possible lexical fillers for the slots within the structure, "On_____ he cooks food." In a similar fashion, the students are presented with *carrots*, *nuts*, *grapes*, *pears*, *peaches*, and other food labels as possible ways to complete the question, "Do you like _____?" Similarly, in *Discover Elementary English Grammar* (Roberts, 1997: 23), within a unit titled "Articles", the students are given the words *electrician*, *politician*, *dentist*, *teacher*, *secretary*, *manager, etc.*, and asked to write *a* or *an* next to each job.

4.2.2 Notional-based and Functionally-based Textbooks

As opposed to the EFL textbooks that take a structural approach to the teaching of English, other EFL textbook writers follow a different approach to second language development and base their selection of vocabulary items upon what they perceive to be the communicative needs of their students. Therefore, the process of deciding what to teach is based on considerations of what the learners might most usefully be able to communicate in a foreign language. Some textbooks focus on notions (e.g. locations) or functions (e.g. requests) hypothesized to be of widest value to the learners. The underlying assumption is that the lexical content of a notional or functional textbook arises from the context chosen to illustrate the exponents of the selected functions and notions (O'Dell, 1997).

Mansouri (1985) and Tinkham (1993, 1997) note that the new L2 words selected to express various notions and functions often form semantic sets. Wilkins (1976:49), as an example, presents the words *tell*, *inform*, *proclaim*, *publish*, *assert*, *declare*, *state*,

emphasize, *argue*, *affirm*, *advocate*, *claim*, and *protest* as examples of words serving the notion "information, asserted", and suggests that these words would fit within a unit of a notional syllabus. In *Functions of English* (Jones, 1981: 67), in a unit entitled "Apologizing and Forgiving", the students are given the words *transistor radio*, *tape recorder*, *electric mixer*, *vacuum cleaner*, *electric kettle*, *etc.* to use in dialogues in which they apologize for breaking one of these electric equipments. Similarly, in *Notions in English* (Jones, 1979: 7), in a unit titled "The Weather", the students are presented with the words *chilly*, *freezing, foggy*, *misty*, *windy*, *mild, hazy*, *clear*, etc.

4.2.3 Lexically- based Textbooks

In the aforementioned structural and notional/functional textbooks, I have illustrated how vocabulary is subservient to other elements of learning and is usually introduced in ways that suits the presentation of grammar, notions or functions. It is presumably assumed that vocabulary acquisition will happen naturally alongside the other tasks of learning grammar, notions, or functions. Conversely, in lexical-based textbooks, vocabulary is used as the unit of progression, thus the main focus of each unit of the textbook is the systematic introduction of new vocabulary (cf. Sinclair and Renouf, 1988; Lewis, 1993, 2001). The lexical items in a lexically-based course are chosen and ordered according to certain criteria. The most common principle used is the frequency of occurrence (Wilkins, 1972; Cornu, 1982; Cajkler and Addelman, 1992; Cook, 1996), which in turn often results in presenting the learners with groups of completely unrelated words. An example of textbooks using frequency as the basis of vocabulary sequencing is *Opening Strategies* (Abbs and Freebairn, 1983). Another criterion which is often used as a basis for sequencing and organizing the lexical content in EFL materials is the semantic field membership (Mackey, 1965; Lewis, 1993). An example of textbooks in which vocabulary items are often sequenced in semantic sets is *Headway* (Soars and Soars, 1991).

4.2.4 Situational-based Textbooks

Similar to textbooks based on notional-functional criteria, a situational textbook follows a learner-centered approach to second language development. In a similar fashion, vocabulary selection is based upon what is perceived to be the needs of learners in specific situations. Consequently, the textbook is organized into units

reflecting these situations for which students may need to use the foreign language, for example, "At the Post Office", "At the Bank", and "Going on a Holiday (Wilkins, 1976). Again, Tinkham (1993, 1997) notes that the new L2 words selected to fit specific situations are often arranged in semantic sets. As an example, Tinkham refers to *Spectrum 2* (Costinett, 1987); in a unit titled "Going Shopping" which intends to address the communicative needs of students purchasing new furniture to fill their apartments, the words *bed*, *sofa*, *chair*, *table*, *dresser*, and *bookcase* are presented to the students. However, an example given by Natinger (1988) of a situational set used in a conversation about a department store includes the words *price*, *floor*, *sales*, *charge*, *clothes*, which seem to share thematic rather than semantic relations. Similarly, Mansouri (1985) referring to the situation: "At the Airport", provides the words *airplane*, *wings*, *body*, *engines*, *airhostess*, *passengers*, *pilot*, *engineers*, *control-tower*, *customs*, and *runway*, which share both semantic and thematic relations. If we examine *Situational Dialogues* (Okenden, 1972) as a prime and early example of a situational-based textbook, we find that words sharing both semantic and thematic ties appear throughout the different units within the textbook. For example, in a unit tilted "In a Restaurant", the learners are presented with the semantic set: *haddock*, *chips*, *salad*, *apple pie*, *custard*. In another unit entitled "In a Post Office", the students are presented with the words *postage*, *letter*, *stamp*, *parcel*, *postal order*, *telegram*, *surcharge*, and *envelope* which seem to share thematic links. Thus, one can assume that new L2 words appearing in a situational textbook are likely to share both semantic and thematic ties.

4.2.5 Topically/Thematically-based Textbooks

Some EFL textbook writers believe that words should occur in normal communication situations to provide information for learners particularly regarding collocation and shades of meaning (cf. Sinclair and Renouf, 1988; Worthington and Nation, 1996). Using "topics" and "themes" as the unit of progression helps largely in meeting these criteria, as the words centered around a certain topic or theme are likely to share syntagmatic links. In a topical or thematic textbook, different topics are seen as the determinant of the course design and, thus, one assumes, the principle of the sequencing of the lexical items involved. Tinkham (1997) notes that in this approach to textbook organization, new L2 words share cognitive rather than linguistic relations as they are associated because of the topic of the text. For example, in *Themes*

(Matthews and Read, 1982: 51), in a unit tilted "Teenagers' Leisure and Pleasure", the learners are introduced to the words *cosmetics*, *cigarettes*, *records*, *books*, and *sports*.

4.2.6 Task-based Textbooks

Task-based textbooks reject the aforementioned linguistic elements such as word, structure, notion, or function as the units of progression. Even situations and topics are criticized by the advocates of task-based textbooks as they are accused of merely serving as carriers of linguistic, lexical and structural items (Long and Crook, 1992). Task is the unit around which language teaching and learning opportunities are organized. Nunan (1989: 10) defines task as "a piece of classroom work which involves learners in comprehending, manipulating, producing or interacting in the target language". The tasks are chosen partly because of their resemblance to the language activities that learners will need to perform outside the classroom (e.g. drawing a map, making a hotel reservation). The aim of the tasks is to create a real purpose for language use and provide a natural context for language study other than simply learning language items for their own sake (Willis, 1996). The learners study the language that arises naturally out of the task cycle and its accompanying materials (Newton, 2001). Nation (2000b) notes that using tasks as the unit of progression in a course results in the occurrence of new L2 words in normal communication situations, and thus one can assume that new words in task-based textbook are likely to appear in thematic groupings. For example, in *Collins Cobuild English Course: Level 3* (Willis and Willis, 1989: 47), within a unit entitled "A Sea Journey", the students are asked to use the words *rough sea*, *ship*, *sea travel*, *sea-sick*, *sailor* to perform the task of comparing experiences of sea journeys.

4.3. Discussion

In 4.2.1 to 4.2.6 above, I have examined a number of textbooks that follow different approaches to vocabulary learning in order to highlight the common methods of lexical sequencing within each of them. Sequencing vocabulary items according to semantic similarity seems to service the methodologies driven by two current approaches to L2 development, i.e. the syntax-based approach and the communicative-based approach. In both approaches, learners are given a large portion of their new vocabulary prepackaged for them in "tidy semantic clusters" (Tinkham, 1993:372). By way of contrast, in textbooks which use topics, themes, or

tasks as the unit of progression, new L2 words often occur in normal communication situations (Nation, 2000b), and are therefore, likely to share thematic relations. With regard to lexical-based textbooks, the method by which vocabulary is sequenced depends largely on the approach which textbooks' writers adopt for the selection of vocabulary. As mentioned earlier (4.2.3), the frequency and range of occurrence is very often used as the main principle of vocabulary content choice. The frequency approach to vocabulary selection rests on the assumption that the most frequent words are the most useful ones for the learners. Here, textbooks are designed around the concept of presenting the most frequently used words first, and proceeding in a linear gradation to less commonly encountered words. Thus, one can assume that in general, courses which rely on frequency and range of occurrence as ways of deciding what vocabulary to learn and the order in which to learn it will present new L2 words in unrelated groupings. Nation (2000b:8) notes that "even if frequency is used as a very rough guide to the sequencing of vocabulary in a course, it would lead to the separation of many members of lexical sets." This is illustrated in Table 4.1 below.

Table 4.1: Word Frequency Counts of Selected Semantic Sets

Member	Frequency
white	334
red	169
black	165
blue	126
green	85
yellow	52
pink	47
orange	8
thin	90
fat	47
old	780
young	436
long	833
short	195
mother	280
father	240
wife	265
husband	163
son	202
daughter	91
brother	135
sister	55
uncle	58
aunt	27

The above table (adopted from Nation, 2000a) indicates that often there are wide frequency differences among words within a semantic set, therefore using frequency as a criterion will keep semantically related words apart.

With regard to lexical-based textbooks following a semantic field approach to vocabulary selection and sequencing, new L2 similar items are often sequenced together so that the teacher may compare and contrast them (Mackey, 1965). The opponents of the semantic approach to vocabulary sequencing (e.g. Nation, 2000b) are in favor of textbooks which rely on units of progression like topics, themes, and tasks. Further, within lexical-based textbooks, the frequency approach to vocabulary selection is recommended as it leads to the separation of semantically related words throughout a course. Conversely, the advocates of the semantic approach to vocabulary sequencing (e.g. Machalias, 1991) have criticized the frequency approach to vocabulary sequencing as it results in the separation of words sharing meaning similarity.

4.4 Summary

In this chapter, I have attempted to present some of the key ways by which new L2 lexical items are often sequenced in textbooks based on different units of progression, namely, grammatical structures, functions, notions, topics, situations and tasks. I have sought to show that when grammatical structures, functions, notions, and situations are used as the units of progression in a course, lexical items sharing semantic features are likely to be grouped together. On the other hand, when topics, themes and tasks are the units of progression, vocabulary items are likely to share thematic ties. With regard to textbooks in which the unit of progression is based on lexical items, the method by which vocabulary items are sequenced to the learners depends to a large extent on the criteria of vocabulary selection used by the course designers. If frequency is used as the basis of vocabulary selection, lexical items are likely to appear in unrelated groupings, whilst if semantic field membership is used as the criterion for selection, vocabulary items will be grouped in semantic sets.

In summary, I have argued in this chapter that the units of progression adopted by textbook designers give rise to specific methods for sequencing new vocabulary items. In Chapters 2 and 3 I have presented the disagreement between L2 writers and

researchers with regard to sequencing new vocabulary items according to meaning similarity. This is mainly due to lack of research in the area of vocabulary sequencing. Therefore, in the following two chapters I will present the empirical study conducted within this research to investigate mainly the effects of different methods of vocabulary sequencing, namely, semantic, thematic, and unrelated on L2 vocabulary learning and retention.

Chapter Five

Experiment 1: Design, Analysis and Results

5.1 Overview

The design of the empirical study within this research comprises two experiments. In this chapter, I present the rationale and design of Experiment 1. Details are provided on the sample, research instruments, materials, and procedures for data collection. In addition, the procedures and results of an initial pilot study, conducted as preparation for the main study, are described. This chapter also presents the statistical analyses and results for Experiment 1.

5.2 Rationale of Experiment 1

As has been shown in Chapter 3 (see 3.4), L2 studies conducted with the aim of comparing the effects of semantic, thematic, and unrelated sets upon vocabulary learning are very limited in their number, and have major limitations (3.4). Further, only one empirical study, that of Tinkham (1997), has investigated the effects of a thematic organisation of new lexical items on vocabulary learning. However, in his study, a comparison was conducted only between the effects of learning words in thematic and unrelated or "unassociated" sets. In other words, Tinkham did not compare the effects of learning words in semantic and thematic sets. Thus, this experiment aimed at investigating the effects of presenting new words in semantic, thematic, and unrelated sets upon L2 vocabulary learning and retention, while avoiding some of the limitations of the previous studies, as well as investigating new parameters that have not been explored hitherto.

I have attempted to avoid the limitations of previous studies by:

- Using sufficient number of target vocabulary items (see 3.4.2) and participants (see 3.4.3).
- Using natural English words instead of nonsense words (see 3.4.2).
- Using participants with previous experience with the target language, i.e. English and that are actual English learners (see 3.4.3).
- Investigating the participants' short-and long-term retention of the target items instead of the number of the trials they take to memorise the items (see 3.4.4).

The issues I wanted to investigate that have not been dealt with before in previous studies concern the following:

- The relationship between the gender of the learners and their acquisition of different types of word sets (i.e. semantic, thematic, and unrelated).
- The relationship between the learners' level of proficiency and their acquisition of different types of word sets (i.e. semantic, thematic, and unrelated).
- The relationship between the learners' vocabulary size and their acquisition of different types of word sets (i.e. semantic, thematic, and unrelated).

There were, therefore, three main aims for Experiment 1. The first was to compare the effects of presenting words in semantic, thematic, and unrelated sets on the vocabulary gains of the research participants. Vocabulary gains in this study were quantitative, operationalised in the form of the number of words known to some degree (see 5.4.3.3 below) versus not known. The second aim was to investigate areas that have not been explored before in similar studies, namely, the relationship between the participants' gender, level of proficiency and vocabulary size on the one hand, and the learnabilty and long-term retention of different types of sets on the other hand. Finally, the third aim was to explore L2 learners' perceptions of learning new L2 vocabulary items in semantic, thematic, and unrelated sets.

Experiment 1 was designed to answer the following research questions (RQ):

RQ 1

Does the way in which new lexical items are grouped in different types of sets - semantic, thematic, unrelated- have different effects on the short-and long-term retention of the lexical items included in each set?

RQ 2

Does the participants' level of proficiency affect the short-and long-term retention of the lexical items within the semantic, thematic, and unrelated sets?

RQ 3

Does the participants' vocabulary size affect the short-and long-term retention of the lexical items within the semantic, thematic, and unrelated sets?

RQ 4

Does the gender of the participants affect the short-and long-term retention of the lexical items within the semantic, thematic, and unrelated sets?

RQ 5

Does the order in which the three different sets are presented affect the short-and long- term retention of the lexical items within the semantic, thematic, and unrelated sets?

RQ 6

What are the participants' perceptions of the learning of new lexical items in the semantic, thematic, and unrelated sets?

These research questions gave rise to the following research hypotheses:

Research Hypothesis 1

Participants presented with a mixed list of different sets of new lexical items - semantic, thematic, and unrelated - will score differently on the post-and follow-up tests in which they are required to recall the meanings of the items presented in each set.

Research Hypothesis 2

The effects of presenting new lexical items in semantic, thematic, and unrelated sets will differ according to the participants' English proficiency level.

Research Hypothesis 3

The effects of presenting new lexical items in semantic, thematic, and unrelated sets will differ according to the participants' vocabulary size.

Research Hypothesis 4

The effects of presenting new lexical items in semantic, thematic and unrelated sets will differ according to the participants' gender.

Research Hypothesis 5

The effects of presenting new lexical items in semantic, thematic, and unrelated sets will differ according to the order in which the different lexical sets are presented to the participants.

5.3 The Pilot Study

To inform the design of the main study comprising the two experiments, a pilot study was carried in March 2001 to assess the adequacy of the research design and of the instruments to be used for data collection. Further, the study was necessary to help ensure the practicality of the study in terms of gaining access to the students. The next sub-section (5.3.1) provides information with regard to the participants of the empirical study. In 5.3.2, I outline the aims of the pilot study. I describe the materials and procedures of the empirical sessions conducted within the pilot study of Experiment 1 in 5.3.3 and 5.3.4. The procedures of piloting the instruments used within Experiment 1 are also described in 5.3.5. The results of the group interviews aimed at investigating the learners' perceptions about learning words in semantic, thematic, and unrelated groupings are given in 5.3.6. Finally, in 5.3.7, I provide a critique of this stage in the research process on the basis of which the design of the main study was formulated.

5.3.1 Participants

The participants in the empirical study were university students in Assuit, a small city in the south of Egypt. They were students enrolled in the English Department at Faculty of Education, majoring in English language and literature. They were chosen, as they were EFL students who were presumably genuinely highly motivated to learn English. All the participants had passed an English entrance examination to the department in which they were required to write a composition and answer comprehension questions on a reading text. All the participants were graduates of the public schools in Egypt which follow a syllabus of the Ministry of Education in Egypt

and use materials that are authorised by it. They had studied English for eight years: two years at the primary stage, three years at the preparatory stage and three more years at the secondary stage. All participants had high scores in the English Language examination administered at the end of general secondary school (not less than forty-two out of fifty) in order to be enrolled in the English department. Within the department, they were enrolled in an extensive program in which they studied: literature (novel, drama and poetry), linguistics (phonetics and grammar), language arts (essay & comprehension and translation) and culture & history of language, in addition to Arabic, French and educational subjects. Exposure to English outside the classroom would consist mainly of English-speaking TV programmes with Arabic subtitles.

5.3.2 Aims

The pilot study involved two experiments. Both of them were conducted in March of 2001. The two experiments aimed at investigating the effects of presenting words in different types of sets, namely, semantic, thematic, and unrelated. However, in Experiment 1, a group of students was given the three types of sets constituting one list of words (mixed) whereas in Experiment 2, there were three different groups of students, and each group learned only one of the three sets (separate). Thus, they had longer sets of words than the participants in Experiment 1. I conducted two sessions of Experiment 1(see 5.3.3 and 5.3.4 below) and one session of Experiment 2 (see 6.3) with first and third year students with the aim of exploring three aspects that needed to be investigated to inform the design of the main study. These aspects are as follows:

1. The number of words to be presented to the participants in each learning session.
2. The time allowed for the learning stage, as the exposure time must be long enough for the learner to grasp the material.
3. The use of either natural or artificial words, as at this point in my research, I had not reached a final decision about the use of artificial or natural words. As illustrated in Chapter 3 (see 3.4.2), using artificial words has both advantages and disadvantages.

5.3.3 Session 1

In this session the participants were given a mixed words list including three groups of words: semantic, thematic, and unrelated, as one of the aims of this experiment was to investigate the students' perceptions of the difficulty and ease by which they learned the three sets, by interviewing them after the learning sessions. Session 1 was conducted with first year students. Students in the English Department are usually divided into smaller seminar groups for some practical sessions. I asked one of the tutors to allow me a short (30 minutes) meeting with his group. The total number of students that were attending the session agreed to participate (N=18).

(a) Materials

The participants were given a list of nine lexical items that they were unlikely to know. Some reserve words had also been prepared in order to substitute them for any of the items that any of the students might know. The word list consisted of three groups of lexical items: three semantically related items (*redingote*, *reefer*, *trews*), three thematically related items (*barque*, *pharos*, *matelot*), and three unrelated items (*betrothal*, *blossom*, *scribe*). The lexical items within each set were chosen from Rogert's Thesaurus.

(b) Procedures

I wrote the nine words on the blackboard and asked the students to identify any of the words for which they thought they knew their meanings. No words were identified by the students, and it was therefore assumed that none of the meanings were known to the students. I informed the students that they would be given a list of three groups of words to learn their meanings, and that they would be given a test at the end of the session (Appendix 5.1 (1)).

The word lists were distributed among the students, each comprising the three word sets accompanied by their English definitions, and they all started learning them at the same time. No time limit was given to the students, as one of the aims of this session was to gain an idea about the time the students would take in learning these words, so that I could decide the time limit for the main study. After collecting the word lists from the students, I distributed the test sheets in which the students were given the

nine words and asked to write down their meanings (English definitions or Arabic translations).

5.3.4 Session 2

Session 2 was conducted with third year students. Again, I asked one of the demonstrators to allow me a short meeting with his seminar group (N=31). In this session, I used the same procedures as with first year students (Session 1). However, instead of using English words, I used artificial words adopted from (Tinkham, 1997) to stand for the L2 lexical items. The given words were as follows:

oosmid	dish	bemouf	library	meykoo	island
bovahp	bowl	ayket	whisper	ejosk	potato
loshae	plate	grivah	quiet	fihawp	beard

After the participants had studied the words, the test sheets were distributed, in which they were given the artificial words and asked to write their meanings (Appendix 5.1 (2)).

5.3.5 Piloting The Instruments

One of the aims of the empirical study, as mentioned above (5.2) was to investigate the relation between the participants' vocabulary size and language proficiency on one hand and their acquisition of different types of word sets on the other hand. I therefore decided to use the Vocabulary Levels Test (Schmitt, 2000) and the "Use of English" section in the First Certificate in English proficiency test (FCE, UCLES, June 2000). The former was used to gain information about the participants' vocabulary size and the latter to measure the level of the participants' language proficiency (for further information on the nature of these tests, see 5.4.3.1 and 5.4.3.2). Both instruments were piloted in March 2001 with the purpose of:

1. Investigating the time needed to finish the tests.
2. Ensuring the suitability of the tests for the students' level.

30 copies of each of the two tests were distributed among first year students in the English Department. The maximum score possible on the "Use of English" test was

75. The scores for this sample ranged from 34 to 66. With regard to the Vocabulary Levels Test, the maximum possible score was 156. The participants' scores ranged from 69 to 143. Thus it was decided that both tests were suitable for the students in terms of being neither too difficult nor too easy for them, and that it would be appropriate to use them in the main study.

5.3.6 Group Interviews

Group interviews were conducted to provide insights into the perspectives and experiences of the students regarding the learning of new vocabulary in different types of sets. Interviews were held with five groups of students that participated in the learning sessions in both experiments, 49 students in total. I divided the students into groups consisting of between 9 and 11 students. The interviews were tape-recorded, then transcribed and translated subsequently. The 18 students participating in the first session in Experiment 1 were divided into two groups. Each group was interviewed in relation to the three sets of lexical items they had just learned. They were asked to identify which set of items they had found the easiest to learn, and which set of items they had found the most difficult to learn. The majority of the students in the two groups (N=13) asserted that the set including the semantically related items (*redingote*, *reefer*, *trews*) was the easiest set to learn due to the words' similarity in meanings, and that the unrelated set (*betrothal*, *blossom*, *scribe*) was the most difficult to learn as there was no relation among the items. Five students could not identify any of the sets to be more difficult than the others.

The students participating in Experiment 2 (see 6.3) were divided into three groups. I asked them about their overall opinions concerning learning words similar in meaning together, and the extent to which this helped or hindered the learning of these words. All the students within the three groups, except two, agreed that learning similar words together helped them to memorise their meanings. They also expressed a preference for learning words sharing meaning similarity together as this helped them to differentiate between the meanings of the words and to remember them later. One student stated that in their school exams, they were usually given "fill in the blank" questions in which they had been required to choose between vocabulary items that were very similar in their meanings, and that, therefore he thought that it was better to learn these words together. As for the two students who disagreed with their

colleagues, one of them mentioned that sometimes learning similar vocabulary items together did cause confusion afterwards. The second student asserted that she always found learning similar vocabulary items difficult. She gave an example that after she had to learn the words *right* and *left* together, she kept cross associating their meanings for a long time afterwards.

5.3.7 Implications for the Main Study

As mentioned earlier (5.3.2), the pilot study was conducted with the aim of answering questions regarding the number of words to be presented to the students each learning session, the time to be allowed for the learning stage, and the use of artificial words. Conducting the piloting sessions helped to inform the number of words to be used in the learning sessions in the main study, in addition to the timing of these sessions.

With regard to the empirical session in which artificial words were used (5.3.4), the students had a completely negative reaction towards learning the artificial words. I conducted a session from the second experiment (6.3), in which English words were used, with the same students I conducted with the session in which artificial words were used. While they were learning the English words, they were very co-operative and interested in learning the new words, as they asked me to conduct more sessions with them, and they had no complaints. In contrast, they were not keen at all while learning the artificial words. For example, they started asking me "what do you mean by artificial?" "Are these words from a certain dialect?" "What do they actually mean?" "Why should we learn them when we are never going to encounter them?" "Why do they look and sound so strange?" They were very surprised at the idea of learning artificial words. Moreover, whilst memorising the artificial words, they complained that the words were too difficult to pronounce and learn, and that they needed a lot of time to be able to memorise these words. They also thought that the words seemed "strange in their structures". One of the students referred to the word "oosmid" stating that "there is no word in English that begins with double "o". The students' reactions towards learning the artificial words led me to decide to drop the idea of using artificial words in the main study, and to use natural English words. I felt that even if I considered using artificial words which conformed to the spelling and phonological patterns of English, this will negatively affect the students' motivation to participate in the main study (see 3.4.2).

With regard to the learning materials, i.e. the learning and testing sheets, the participants had no problems in comprehending the procedures. The only problem I encountered was that the majority of the students wrote the words down in their notebooks while studying them. Thus, it was decided to add a blank sheet to the learning handouts in the main study in order to ensure that the participants did not write the words in their notebooks while learning them, which in turn might affect the results of the post-and follow-up tests.

Regarding the group interviews, I encountered some problems when running the interviews. Some students were reluctant to join the discussion; I tried to gently draw them into the discussion by directing the questions to them, but they just agreed with the more confident students who took the lead in answering the questions. I decided therefore to conduct individual interviews in the main study to avoid this problem.

5.4 Main Study: Experiment 1

Experiment 1 was conducted in October and November of 2001. In this experiment, the participants were given in each of the learning sessions, a mixed word list comprising of three word sets: semantic, thematic, and unrelated.

5.4.1 Participants

First year students were used in Experiment 1 (N=189). I drew numbers to assign the students randomly to six groups (N=32, 32, 32, 31, 31, 31). All the students were native speakers of Arabic, aged between 18 and 20. The participants were informed by their tutors and myself that they would be taking part in an experiment designed to determine the effectiveness of several methods of vocabulary presentation, and they voluntarily agreed to participate.

5.4.2 Materials

5.4.2.1 Selection of the Target Words

The two experiments comprising the empirical study required the preparation of three types of word sets: semantic, thematic, and unrelated which I define as follows. The semantic sets consisted of linguistically related words sharing a tight semantic structure. In other words, they shared common semantic features. The items within the semantic sets were chosen so that each constituted a semantic field with co-

ordinate links forming a potential word-web of the kind that has been suggested might characterise the mental lexicon (see Aitchison, 1987, Chapter 7). The superordinates for the co-ordinates were used only in Experiment 2 (see 6.4.2). For example, *larceny* was presented as the superordinate of the co-ordinates: *pilfering*, *mugging*, *embezzlement*, *brigandage*, *pillaging*, *rustling*, *looting* and *plundering*.

The thematic sets I define as including cognitively associated words sharing a thematic concept but which could not be precisely defined in relation to the other words in the sets. Further, they were more likely to be related to each other in a kind of story line. For example, *larceny*, *filcher*, *slammer*, and *booty* (see Tables 5.1 and 6.1 for selection of the actual lexical items in the two experiments).

The unrelated sets I define as consisting of words that shared no organisational theme to indicate the relationships among the words. Thus, the items in the unrelated sets had no relationship - neither semantic nor thematic - with each other. For example, *larceny*, *magnitude*, *reverence*, and *interment*.

A specific definition for each target word was chosen after employing several dictionaries: Oxford Concise English Dictionary, Cambridge International Dictionary of English, and Longman Active Study Dictionary. The following criteria were used in the selection of L2 vocabulary items:

1. The target words had to be unfamiliar to the students. I did not pre-test the target items to be used in the study as a decision was made that it was not feasible to administer a pre-test in this study. The use of the actual words in the pre-test that were also to be used in the learning sessions would have adversely affected the exposure validity of the experiments, as a possibility would be that the target items would have been learned from the pre-test. This in turn would have represented a significant compromise in terms of the validity of the outcomes of the experiments. However, to verify that the words would be unfamiliar to the students, several procedures were carried out:

1.1 A number of lecturers teaching first and second year students were asked to identify any of the target words for which they thought the students might know their meanings. All the lecturers asserted that it was very unlikely that any of the words presented to them via the word lists would be known to the students.

1.2 A checklist including the target words was distributed among 30 students in their fourth year in the English Department. The students were given all the target words that were to be used in the study, and asked to identify the words they thought they knew and to write their meanings next to them. Most of the students handed back blank sheets. Some of the words were translated but they were incorrect guesses or inferences from similar sounding words such as petrol for *patrol,* foolishness for *foppishness,* depressed for *miser,* receipt for *recipe,* bouquet for *banquet,* dozen for *denizen,* commitment for *committal,* slimming trainer for *slammer,* and chasing for *chastisement.*

1.3 To cover the possibility of some of the words being known to the students during the experimental sessions, I prepared reserve words fulfilling the same criteria.

2. The target words had to present familiar concepts within the Egyptian context.

3. To ensure that the lexical items in the three types of sets would be of equal difficulty, two criteria were established:

3.1 The three word sets in each of the six learning sessions in the two experiments were balanced in length. Harrison (1980) points out that word length is a good indicator of vocabulary difficulty. Further, it has been asserted in several studies that longer words might be more difficult to learn than the shorter ones (cf. Laufer, 1991). Length is usually measured in term of syllables (Ellis, 1995), and this procedure was adopted in this study. For example, in Experiment 1, Session 2, the three word sets were as follows: *bequest, wherewithal, remittance, defrayment / apparel, seamstress, foppishness, drapery / denizen, tidings, genocide, pugilist.*

3.2 The second criterion was concerned with parts of speech. It has been argued that certain grammatical categories are more difficult to learn than others: nouns seem to be the easiest; adverbs the most difficult; verbs and adjectives somewhere in between (cf. Rodgers, 1969; Laufer, 1991; Ellis and Beaton, 1993). Therefore all the lexical items selected to be used in the study were nouns.

5.4.2.2 Validation of the Target Words

Validity is considered to be a general phenomenon indicating that one can have confidence in using data for a particular purpose (Messick: 1980). In respect to my particular experiments, validating the word sets used in this study therefore involved trying to ensure that the words used in the semantic sets were actually semantically related, and that words used in the thematic sets did share thematic rather than semantic relationships.

The primary purpose was to confirm the researcher's judgement of choosing the semantic and thematic sets. I therefore sought the feedback of native speakers for the construction of the semantic and thematic sets through two stages:

Stage 1

I decided to use six words as the basis for constructing the semantic, thematic, and unrelated sets. These leading words would stand as superordinates of the semantic sets (comprising co-ordinates) which came after them. In other words, the meanings represented by these leading terms would be fully included within the meanings of all the other words in the semantic sets, which followed them. For example, the leading word in the first session in Experiment 2 is *larceny*, i.e. **stealing**, and was followed by the words *rustling*, i.e. **stealing** cattle and *looting*, i.e. **stealing** goods.

The superordinates selected for my experiments were *larceny*, *manducation*, *pongo*, *pelf*, *barque*, and *apparel*. In the first stage, I distributed sheets including the 6 leading words amongst 26 postgraduate English native speaker students and TEFL staff in The Graduate School of Education, University of Bristol (Appendix 5.2 (1)). I asked them to think of two lists of words to go under each leading word. The first list

was to include words that were semantically related to the leading words, and the other was to include indirectly or thematically related words to the leading words.

On receipt of the lists, I compared these to the one I had originally prepared. Words that were repeated in the native speakers' lists and mine were retained to be used in the experiments, while words about which there was some disagreement, and which appeared in both the semantic and thematic lists were eliminated, even if the disagreement was only on behalf of one respondent. For example, the word *mastication* was used both as a semantically and a thematically related word to the word *manducation*, therefore, it was replaced by another word. In addition to the native speaker feedback, I consulted WordNet (see 2.5) for the co-ordinates of these six words in the semantic sets.

Stage 2

After preparing the semantic and thematic sets to be used in the study, native speakers' opinions were sought on a second occasion (the same group consulted in Stage 1). The twelve sets (six semantic and six thematic) were distributed amongst them, and they were asked to point out any word that they thought did not fit the set in which it appeared (Appendix 5.2 (2)). I received feedback from four of my colleagues, none of whom suggested any changes.

5.4.3 Instruments

5.4.3.1 Vocabulary Size Test

Originally called the Vocabulary Levels Test, the Vocabulary Size Test (hereafter VST) was developed by Nation (1983, 1990) to measure passive vocabulary knowledge. The VST is composed of five parts, representative of five different vocabulary size levels in English, namely, the 2,000 word level, the 3,000 word level, the 5,000 word level, the 10,000 word level, and the academic word level. At each vocabulary size level, there are six test items, each comprising six words and three definitions. The test-taker is required to match the three definitions with three of the six words provided by writing the corresponding number of the words beside the definitions. An example taken from the instruction part of the VST is given below:

1	business	
2	clock	---6--- part of a house
3	horse	---3--- animal with four legs
4	pencil	---4--- something used for writing
5	shoe	
6	wall	

The words at each level of the test are considered to be a representative sample of English words at that frequency level (Nation, 1983). Because of the way the VST was constructed, the chance of guessing correctly is low and thus, the testees' scores may be regarded as "a close approximation to the proportion of words in the test that they know" (Nation, 1990: 262). Furthermore, the target words in the test are decontextualised, because it was felt that context might provide clues to their meanings.

This test has been accepted by a number of L2 researchers as an appropriate measure of vocabulary size (cf. Laufer, 1992, 1996; Yu, 1996). Yu (1996), as an example, in his study of Chinese and Japanese university students' use of English motion verbs, used the VST to determine the initial vocabulary size of his participants. Before putting the test to formal use in his main study, Yu piloted two levels of the test (the 2,000 and 3,000 word levels) with a sample of 47 adult ESL students together with 32 items selected from two established English proficiency tests (Test of English as a Foreign Language and Michigan Placement test). Yu reported a very high correlation (0.99) between the VST and the TOEFL/Michigan test items. According to Anastasi (1961), correlations between a new test and a previous test are argued to be as evidence of validity, which in turn demonstrated the validity of the VST.

The complete first version of the VST devised by Schmitt (2000) (Appendix 5.3) was used in the present study to assess the participants' passive vocabulary level, and thus examine if there is a significant relationship between the participants' vocabulary size and their retention of different set types (i.e. semantic, thematic, and unrelated).

5.4.3.2 General English Language Proficiency Measure

Thomas (1994: 309) notes that "the performance of a particular group of learners in a certain context or in a certain experimental task needs to be understood in the light of their present state of knowledge of L2". Taking into consideration the possibility that

participants with different levels of proficiency might perform differently from each other after learning the three set types (i.e. semantic, thematic, and unrelated), it was decided to measure the participants' language proficiency to be able to administer comparisons in relation to their performance.

Due to time constraints for the participants, it became clear that it would not be possible to administer a complete version of a proficiency test. I therefore decided to use the "Use of English" section in the First Certificate in English proficiency examination (FCE) to gain information about the participants' language proficiency (Appendix 5.4). The FCE is developed by the University of Cambridge Local Examination Syndicate for Learners of English (UCLES) suite of five exams designed for different proficiency levels. This particular exam is geared toward intermediate-level students, therefore it was thought that it would suit university students in Egypt, who had been studying English for eight or nine years. The "Use of English" section of the examination is designed to assess the testees' ability to use English at the word and sentence levels. Thus, it was chosen, as the most relevant to the focus of this research on vocabulary acquisition. The reliability estimates for the FCE (based on alpha) are routinely above 0.8 (Taylor: personal communication). Therefore, I have chosen it as a reliable measure that could provide me with an idea about the participants' language ability.

5.4.3.3 The Post-and Follow-up Tests

The two experiments within this research required post-tests to investigate the short-term retention of the target items and follow-up tests to examine the differential effects of learning the target items over time. Receptive learning tests were used in the two experiments to measure the participants' vocabulary gains. The participants were given the target words and asked to write down their meanings, i.e. English definitions or Arabic translations. Nation, (1982) notes that receptive learning involves being able to recall the translation of the foreign word when the foreign word has been said or heard, which shows an ability to recognise the word and to recall the meaning learned. He also asserts that this kind of knowledge is critically important. Nevertheless, it is only part of what is involved in knowing a word. Nation (2000a: 397) asserts that knowing a word involves a wide range of features; at the most basic level this involves being familiar with the written and spoken forms of the word and

being able to associate a meaning with those forms. Other kinds of knowledge include: being able to use it grammatically correctly in a sentence with suitable collocations, being able to interpret and create other members of its word family by using inflectional and derivational affixes, being aware of restrictions on the use of the word for cultural, geographical, stylistic, or register reasons, and being aware of the range of meanings and associations the word has.

Overall, L2 writers (cf. Parry, 1993) view vocabulary development as a gradual process. As the learner repeatedly comes into contact with and uses a specific lexical item, an understanding of the word's form and meaning are strengthened, while other word knowledge aspects are gradually added. Read (2000) notes that it seems unreasonable to assume that a word will be "fully" known after being encountered on a single occasion. It was more realistic, therefore, to expect that participants in this study would acquire a degree of partial knowledge of the target words. The learning tasks in this research were restricted to memorising the association between the L2 words and their definitions. Exposure to unknown lexical items in the learning tasks was clearly sufficient to give the learners knowledge of their meanings (as was demonstrated in the pilot study). This study therefore interpreted production of the meaning of a lexical item as evidence that a word is "known", even though this type of response may only demonstrate partial knowledge. However, I can make no claim that the learners in these studies had fully acquired the new items as part of their active and productive lexicon. Since I considered the learning task to be limited in that it was restricted to associating the target items with their meanings, the test format, as suggested by Read (2000), should be similarly limited in its demands. Thus, by the same token, the tests were designed to assess only the meanings of the target words.

I administered two tests: a post-test immediately after each learning session in order to test short-term memory of the target items, and a follow-up test a week after to test long-term retention of the target items. Both the post-and follow-up tests comprised the target words printed in a column down the left side of the page with lines to the right side upon which the participants were to provide the meanings. The follow-up tests were the same as the post-tests in both experiments, except that the order of the target items was changed to offset the possibility that the participants might remember

which meaning goes where on the test from the post-tests. Unlimited time was given for the completion of these two tests.

5.4.4 Learning Materials: Experiment 1

In each of the six learning sessions conducted with the participants within Experiment 1, they were given three groups of words: four semantically related words (S), four thematically related words (T), and four unrelated words (U), as illustrated in Table 5.1 below.

Table 5.1: Word Sets Used in Experiment 1

Session	Semantic sets	Thematic sets	Unrelated sets
1	looting, rustling, pilfering, embezzlement	manducation, banquet, crockery, recipe	betrothal, blossom, fatigue, disparity
2	bequest, wherewithal, remittance, defrayment	apparel, seamstress, foppishness, drapery	denizen, tidings, genocide, pugilist
3	nibbling, guzzling, devouring, chomping	larceny, booty, slammer, filcher	vagrant, frigate, magnitude, stroller
4	tug, trawler, dinghy, skiff	pelf, billfold, miser, mint	scribe, foliage, sneakers, foe
5	sapper, sentry, cavalry, patrol	vessel, matelot, mooring, pharos	tumbler, consent, succour, penitence
6	layette, trousseau, livery, mufti	pongo, skirmish, sniping, rations	billow, sapling, vigour, censure

Each word within the three sets was paired with its English definition and followed by a sentence in which it was used (Appendices 5.5 (1) – 5.5 (6)). In the six vocabulary learning sessions, all the participants were given the same word groupings. However, to offset the possibility of order effects, I rotated the order of the sets to each of the six groups. Thus, although the six groups received the same three sets of words across the six learning sessions, each group was given the three sets in an order different from that of the other groups. There were, thus, six orders of the word sets distributed to the six groups, (namely, STU, SUT, TSU, TUS, UST, UTS). Table 5.2 below presents the order by which each of the six groups was given the three sets in each session.

Table 5.2 Presentation Order of Word Sets Used in Experiment 1

Group	Order of presentation of the three sets
1	semantic/ thematic/ unrelated (STU)
2	semantic/ unrelated/ thematic (SUT)
3	thematic/ semantic/ unrelated (TSU)
4	thematic/ unrelated/ semantic (TUS)
5	unrelated/ semantic/ thematic (UST)
6	unrelated/ thematic/ semantic (UTS)

The participants were given a 5-page handout in each of the six learning sessions. The first page was a title sheet which included the instructions and also solicited from each participant three items of "identifying" information: student's name, year, and the date (included in Appendix 5.5 (1)). Each of the following three pages included one of the word sets ordered according to the group to whom it was distributed. The last sheet was blank in order to be used if the participants wanted to write the words down while studying them.

The participants were not allowed to keep these handouts, and thus they had no lists of words to take with them that might have affected their performance in the follow-up tests. However, in order to maintain the students' interest in participating in the experiment, they were told that they would receive all their materials back after attending all the six learning sessions.

5.4.5 Procedures

I met the students for the learning and testing sessions on Saturdays and Tuesdays for four weeks. Two lecturers gave me time out of their teaching sessions (30-45 minutes). All the learning and testing sessions were administered in a large lecture room in which the students usually attended their lectures. The participants within each group were given a number (1-6) that was written on their learning and testing sheets. Before starting the first learning session, I assigned the participants to each of the six groups by calling their names and asking the members of each group to sit together. The participants within each of the six groups were asked to sit together in the same place in each of the subsequent sessions and to memorise their group number in order to ensure they received the right learning and testing handouts.

Experiment 1 consisted of 2 stages: (1) the learning stage, and (2) the testing stage. These will be described in the following sub-sections.

5.4.5.1 The Learning Stage

In each of the six sessions, I wrote the lexical items within the three sets on the blackboard and asked the students to identify any items for which they thought they knew their meanings. None of the participants across the six groups indicated in any of the six sessions that they were familiar with the nouns used in the study. I therefore did not have to use any of the reserve words I had prepared in any of the six sessions, as all the participants reported that the words were unknown to them.

In the first session, I gave the students detailed instructions. They were instructed that they would be given three groups of lexical items in each learning session, and that they had to learn all the items within the three groups in five minutes. They were told to read the sentence following each word. They were also told that they would be tested on these items at the end of each session, and the nature of the test was described to them. Further, I indicated that if they wanted to write the words while learning them, to use the blank sheet provided in the handouts. Once the participants received their materials, they were instructed to complete the information solicited on the instruction sheet. They were asked not to turn over to the next page until instructed to do so. The reason for this was to ensure that they would all start leaning the meanings of the target items at the same time.

5.4.5.2 The Testing Stage

As mentioned earlier (5.4.3.3) this stage comprised of two phases: (1) a post-test that was administered immediately after each learning session in order to investigate the short-term retention of the target items, and (2) a follow-up test that was conducted a week after each session in order to examine the differential effects of learning the three sets over time. In both tests, students were asked to give the meanings of the target words either by providing their English definitions or Arabic translations (see Appendices 5.5 (1) to 5.5 (6)). The test sheets for both the post and follow-up tests were the same for the six conditions (STU, SUT, TSU, TUS, UST, UTS). There was no time limit for the tests. To eliminate the effects of ranking order, the order of the

words on the test sheets were reversed from the order in which they appeared on the learning handouts.

In terms of scoring, for each learning session, each participant obtained two scores: one for the post-test and one for the follow-up test. Scores were allocated on the following basis: correct (1 point) or incorrect / blank (0 points). The reason behind this strict scoring was due to the use of semantic sets, as it was obvious that the participants were required to differentiate the meanings of the words within the semantic sets, and thus they were expected to give accurate definitions of the words. Therefore, for example, a participant defining the word *pilfering* as stealing instead of giving the complete meaning, i.e. stealing things of a little value was awarded 0.

I calculated the scores for the two tests for each set type (semantic, thematic, and unrelated) separately for the six sessions. Each set included four words and the participants were given six sets from each type within the six sessions. Thus, the maximum possible score for a participant for each set was 24.

5.4.6 Verbal Reports

In addition to testing the research hypotheses of the study (see 5.2), the question of the participants' perceptions of the three types of sets was explored. Retrospective verbal-report data was elicited via structured individual interviews immediately following completion of each learning session. After each of the six learning sessions, a number of participants were chosen randomly from the six groups. The participants were asked which of the three groups of words that they had just learned seemed to be the easiest to learn and to remember in the test, why that group seemed to be easy, which group seemed to be the most difficult to learn and to remember in the test and why that group seemed to be difficult. The retrospective interviews were conducted in Arabic with 45 participants. All of the interviews were tape-recorded. After transcribing, the Arabic transcripts were translated in full, word-processed, and then content-analysed.

5.5 Analysis and Results

This section presents the statistical analyses for Experiment 1. The computational work for all the statistical testing was performed using the Statistical Packages for the

Social Sciences (SPSS), version 9.0. Attrition of participants occurred as a result of absenteeism during the learning and testing sessions or through student unwillingness to continue participation in the study. Data was analysed only for participants who had been present for all the six learning sessions in the experiment, and who also undertook the 6 post- and follow-up tests. Therefore for Experiment 1, 109 complete sets of data were analysed, as 80 participants were removed from the investigation. In the following subsections, data analyses and results are reported for the five hypotheses of the experiment followed by the findings from the students' interviews.

5.5.1 Hypothesis 1

Premised on the assumption that presenting new L2 lexical items to the learners in different groupings, namely, semantic, thematic, and unrelated will lead to differential performance in the post-and follow-up tests, Research Hypothesis 1 was as follows:

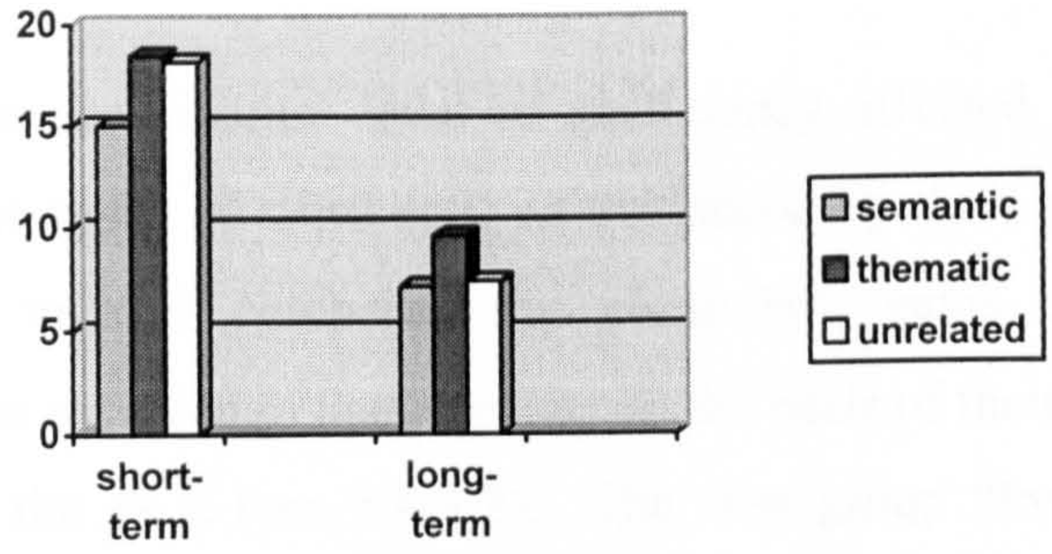
H1. Participants presented with a mixed list of different sets of new lexical items - semantic, thematic, and unrelated - will score differently on the post-and follow-up tests in which they are required to recall the meanings of the items presented in each set.

One-way repeated measures ANOVAs were conducted to determine whether or not there is a statistically significant relationship at the level of $p < 0.05$ between the independent variable (alternate methods for grouping new L2 words, i.e. semantic, thematic, and unrelated) and the dependant variable (the participants' vocabulary gains in the post-and follow-up tests). The means and standard deviations are presented in Table 5.3 (see Figure 5.1). Analysis of the post-test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.546, F (2, 107) = 44.533, $p < 0.001$, Multivariate eta squared = 0.454. Using the commonly used guidelines proposed by Cohen (1988) (0.01 = small, 0.06 = moderate, 0.14 = large effect), this result suggests a very large effect size. Analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.657, F (2, 107) = 27.883, $p < 0.001$, Multivariate eta squared = 0.343.

Table 5.3 Means and Standard Deviations for the Post-and Follow-up Test Scores of the Participants in Experiment 1

	Short-term (post-tests)		Long-term (follow-up tests)	
	mean	SD	mean	SD
Semantic sets	14.98	5.56	7.14	3.97
Thematic sets	18.44	4.02	9.62	5.30
Unrelated sets	18.13	4.30	7.40	4.88

Figure 5.1: Mean Scores for the Post-and Follow-up Test Scores of the Participants in Experiment 1



Among several post hoc tests under repeated measures conditions available in the SPSS, the Bonferroni's procedure was chosen to identify which set of scores differ significantly from each other. Kinnear and Gray (2000) and Field (2000) recommend the Bonferroni method, as it keeps very tight Type 1 error control, i.e. claiming that there is a difference between the different groups in the study, while there really is not.

The post-test scores of the three set types (i.e. semantic, thematic and unrelated) were compared. As shown in Table 5.3, the thematic sets' mean score (M= 18.44, SD = 4.02) was significantly higher than the semantic sets (M= 14.98, SD= 5.56). The mean score for the unrelated set (M = 18.13, SD = 4.30) was significantly higher than the semantic sets. There was no significant difference in the mean scores between the thematic and unrelated sets.

Similarly, the follow- up test scores of the three types of sets were compared. The mean score for the thematic sets (M = 9.62, SD = 5.30) was significantly higher than both the semantic (M = 7.14, SD = 3.97) and unrelated sets (M = 7.40, SD= 4.88). However, there was no significant difference in the mean scores between the semantic and unrelated sets.

5.5.2 Hypothesis 2

Premised on the assumption that learners with different levels of L2 knowledge might learn and retain different groupings of lexical items (i.e. semantic, thematic, and unrelated) differently from each other, Research Hypothesis 2 was as follows:

H2. The effects of presenting new lexical items in semantic, thematic, and unrelated sets will differ according to the participants' English proficiency level.

To investigate if the participants' level of proficiency affected their learning and retention of the three types of word sets, as evidenced by their performance in the post-and follow-up tests, I compared the vocabulary gains of two groups of participants who were assigned to those groups on the basis of their scores in the "Use of English" part of the FCE (see 5.4.3.2). The first group "low group" included participants (N=20) that scored the lowest scores in the test. Their scores ranged from 28 to 40. The second group "advanced group" included participants (N=20) that obtained the highest scores on the proficiency test, with scores ranging from 54 to 68. One-way repeated measures ANOVAs were conducted to compare the scores of these two English language ability groups on the semantic, thematic, and unrelated sets in the post-and follow-up tests. The means and standard deviations of the scores for the two groups are presented in Table 5.4 (see Figures 5.2 and 5.3)

Table 5.4: Means and Standard Deviations for the Post- and Follow-up Test Scores of the Lower and Higher Language Ability Groups

	Low group (lower English language ability)				Advanced group (higher English language ability)			
	Short-term (post-tests)		Long-term (follow-up tests)		Short-term (post-tests)		Long-term (follow-up tests)	
	mean	SD	mean	SD	mean	SD	mean	SD
semantic sets	12.10	3.89	4.90	2.40	22.05	1.73	11.00	5.27
thematic sets	17.40	2.76	9.80	3.72	21.90	1.45	14.55	4.01
unrelated sets	17.50	3.94	6.85	4.16	21.15	3.90	11.35	3.96

Figure 5.2: Mean Scores for the Post-and Follow-up Test Scores of the Lower Language Ability Group

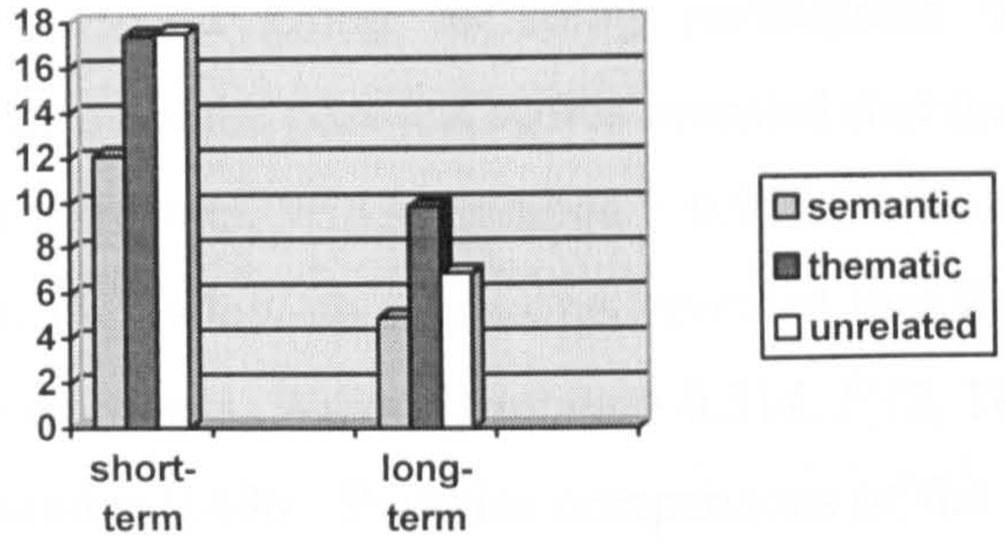
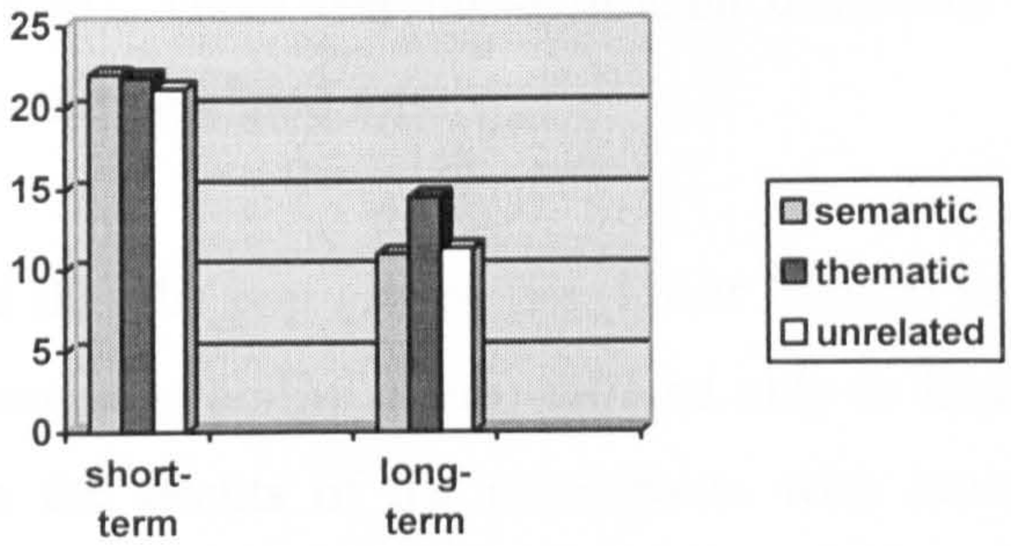


Figure 5.3: Mean Scores for the Post-and Follow-up Test Scores of the Higher Language Ability Group



Regarding the first group including participants with lower English proficiency level, analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.320, F (2, 18) = 19.163, $p < 0.001$, Multivariate eta squared = 0.680. Pairwise comparisons of the post-test scores for the first group showed that the thematic sets' mean score (M = 17.40, SD = 2.76) was significantly higher than the semantic sets (M = 12.10, SD = 3.89). The mean score for the unrelated sets (M = 17.50, SD = 3.94) was significantly higher than the semantic sets. There was no significant difference in the mean scores between the thematic and unrelated sets. Analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.216, F (2, 18) = 32.712, $p < 0.001$, Multivariate eta squared = 0.784. Pairwise comparisons of the follow-up test scores showed that the mean score for the thematic sets (M = 9.80, SD = 3.72) was significantly higher from both the semantic (M= 4.90, SD = 2.40) and

unrelated sets ($M = 6.85$, $SD = 4.16$). There was no significant difference in the mean scores between the semantic and unrelated sets.

With regard to the second group including participants with higher English proficiency level, analysis of the post-test scores revealed that there was no significant effect for the type of word sets, Wilks' Lambda = 0.953, F (2, 18) = 0.443, $p < 0.65$. However, analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.514, F (2, 18) = 8.515, $p < 0.002$, Multivariate eta squared = 0.486. Pairwise comparisons of the follow-up test scores showed that the mean score for the thematic sets (M = 14.55, SD = 4.01) was significantly higher from both the semantic (M = 11.00, SD = 5.27) and unrelated sets (M = 11.35, SD = 3.96). There was no significant difference in the mean scores between the semantic and unrelated sets.

The results indicated that the two groups (i.e. lower English language ability group and higher English language ability group) differed only in their performance in the post-tests. Whereas the results of the participants with lower proficiency levels showed that the mean scores for both the thematic and unrelated sets were significantly higher than the semantic sets, the results of the advanced group did not show any significant differences in the mean scores among the three types of sets.

5.5.3 Hypothesis 3

Premised on the assumption that participants with different levels of vocabulary size, as measured by the VST (see 5.4.3.1), might differ in their learning and retention of new L2 lexical items presented in different types of groupings (i.e. semantic, thematic, and unrelated), Research Hypothesis 3 was as follows:

H3. The effects of presenting new lexical items in semantic, thematic, and unrelated sets will differ according to the participants' vocabulary size.

To examine if there is a significant relationship between the participants' vocabulary size and their retention of different types of sets, I compared the vocabulary gains of two groups of participants who were assigned to those groups on the basis of their vocabulary scores in the VST. The first group included participants (N=20) that

scored the lowest scores in the VST. Their scores ranged from 51 to 68. The second group included participants (N=20) that obtained the highest scores on the VST, with scores ranging from 95 to 150. I compared the difference in the two groups' vocabulary acquisition scores in the post- and follow-up tests by means of separate one-way repeated measures ANOVAs. The means and standard deviations of the scores for the two groups are presented in Table 5.5 (see Figures 5.4 and 5.5).

Table 5.5: Means and Standard Deviations for the Post-and Follow-up Test Scores of Limited Vocabulary Size Participants and Broader Vocabulary Size Participants

	Limited VS participants				Broad VS participants			
	Short-term (post-tests)		Long-term (follow-up tests)		Short-term (post-tests)		Long-term (follow-up tests)	
	mean	SD	mean	SD	mean	SD	mean	SD
semantic sets	11.70	3.88	5.15	2.11	21.90	1.71	10.75	5.15
thematic sets	16.55	3.10	9.80	3.55	22.00	1.52	15.35	3.60
unrelated sets	17.30	4.12	6.45	4.52	21.50	3.65	12.70	4.52

Figure 5.4: Mean Scores for the Post-and Follow-up Test Scores of the Limited Vocabulary Size Participants

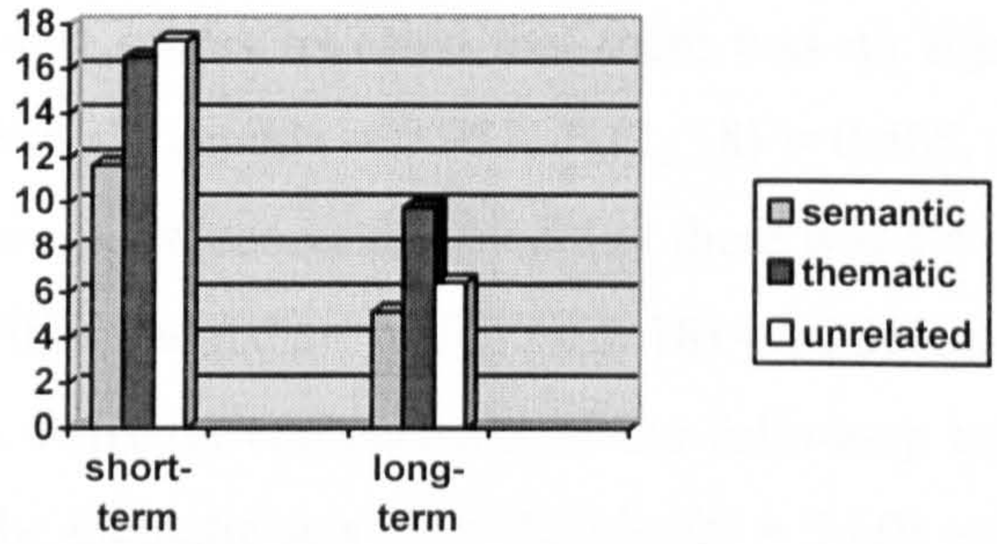
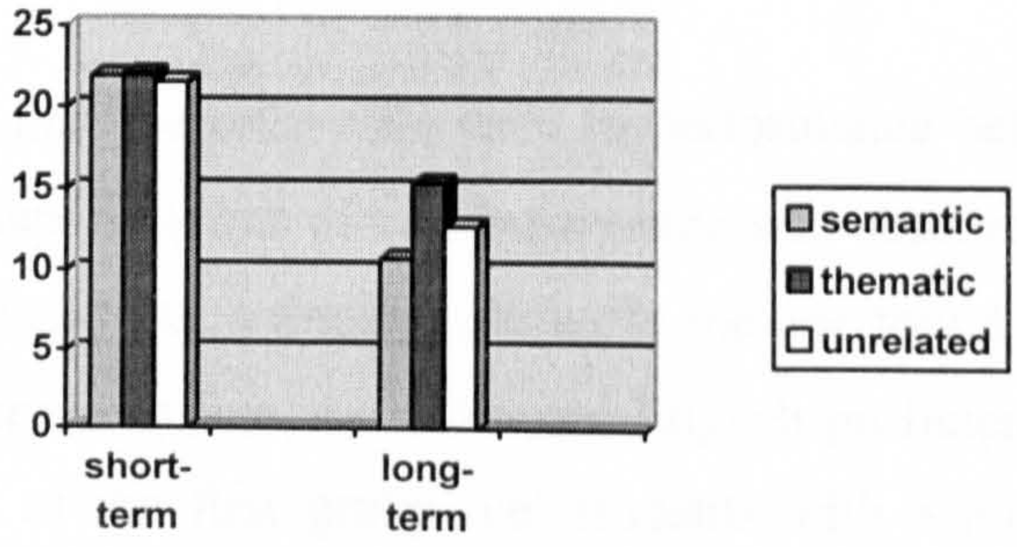


Figure 5.5: Mean Scores for the Post-and Follow-up Test Scores of the Broad Vocabulary Size Participants



With regard to the first group of participants who evidenced a smaller vocabulary size on the VST, analysis of the post-test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.367, F (2, 18) = 15.537, $p < 0.001$, Multivariate eta squared = 0.633. Pairwise comparisons of the post-test scores for the first group showed that the thematic sets' mean score (M = 16.55, SD = 3.10) was significantly higher than the semantic sets (M= 11.70, SD = 3.88). The mean score for the unrelated sets (M = 17.30, SD = 4.12) was significantly higher than the semantic sets. There was no significant difference in the mean scores between the thematic and unrelated sets. Analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.229, F (2, 18) = 30.366, $p < 0.001$, Multivariate eta squared = 0.771. Pairwise comparisons of the follow-up test scores show that the mean score for the thematic sets (M = 9.80, SD = 3.55) was significantly higher from both the semantic (M = 5.15, SD = 2.11) and unrelated sets (M = 6.45, SD = 4.52). There was no significant difference in the mean scores between the semantic and unrelated sets.

Regarding the second group comprising participants with larger vocabulary size, analysis of the post-test scores revealed that there was no significant effect for the type of word sets, Wilks' Lambda = 0.957, F (2, 18) = 0.408, $p < 0.671$. However, analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.355, F (2, 18) = 16.339, $p < 0.001$, Multivariate eta squared = 0.645. Pairwise comparisons of the follow-up test scores showed that the mean score for the thematic sets (M = 15.35, SD = 3.60) was significantly higher from both the semantic (M = 10.75, SD = 5.15) and unrelated sets (M = 12.70, SD = 4.52). There was no significant difference in the mean scores between the semantic and unrelated sets.

The results indicate that the only difference in performance between the lower and higher achieving groups in terms of vocabulary size was observed in relation to their performance in the post-tests, a finding similar to the one found when comparing the performance of groups with low and advanced English proficiency level (see 6.3.2). Whereas the results of the first group, i.e. students with a more limited range of vocabulary size showed that the mean scores for both the semantic and unrelated sets were significantly higher than the semantic sets, the results of the group with broader

vocabulary size did not show any significant differences in the mean scores among the three types of sets.

5.5.4 Hypothesis 4

Premised on the assumption that male and female L2 learners might differ in their learning and retention of new L2 lexical items presented in different groupings (i.e. semantic, thematic, and unrelated), Research Hypothesis 4 was as follows:

H4. The effects of presenting new lexical items in semantic, thematic and unrelated sets will differ according to the participants' gender.

To investigate whether there were any gender effects on the short-and long-term retention of the three types of word sets. I compared the vocabulary gains (defined by the participants' performance on the post-and follow-up tests) of male and female participants. I had complete data sets for 63 female participants and 46 male participants. Analysis of Variance is considered robust to violation of assumptions of normality and homogeneity of variance, provided the size of the groups is similar (Tabachnick and Fidell, 1989, 1996; Stevens, 1992; Field, 2000), thus 17 participants from the males were eliminated randomly, and I analysed the data of 46 male participants and 46 female participants. One way repeated measures ANOVAs were conducted to compare the scores of the male and female participants on the semantic, thematic, and unrelated sets in the post-and follow-up tests. The means and standard deviations of the scores for the two groups are presented in Table 5.6 (see Figures 5.6 and 5.7).

Table 5.6:Means and Standard Deviations for the Post- and Follow-up Test Scores of Male and Female participants

	Male participants				Female participants			
	Short-term (post-tests)		Long-term (follow-up tests)		Short-term (post-tests)		Long-term (follow-up tests)	
	mean	SD	mean	SD	mean	SD	mean	SD
semantic sets	14.98	5.18	5.59	3.65	15.33	5.72	7.28	4.31
thematic sets	18.65	3.95	7.91	4.52	19.46	4.35	10.72	4.91
unrelated sets	18.24	4.41	5.91	4.44	18.76	4.44	8.72	5.26

Figure 5.6: Mean Scores for the Post-and Follow-up Test Scores of the Male Participants

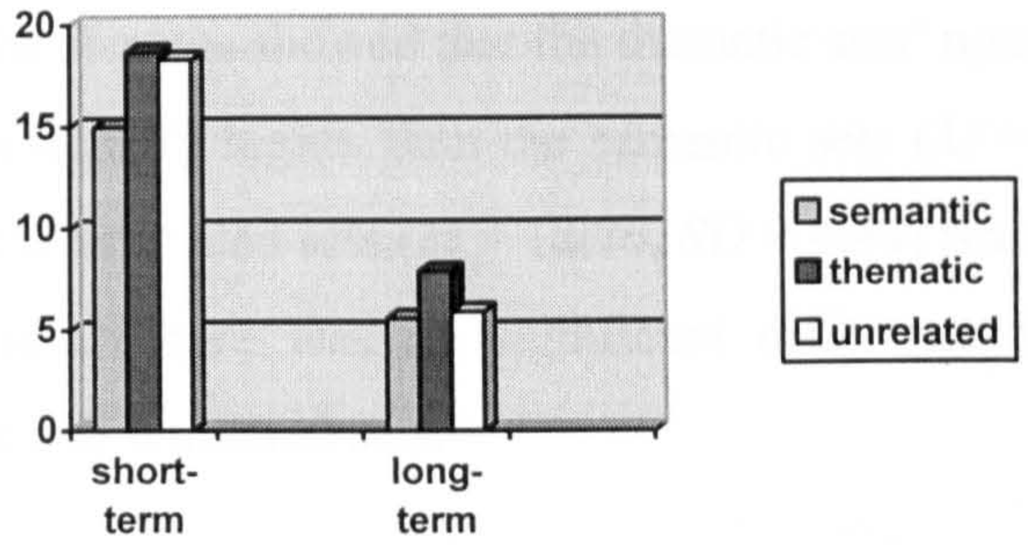
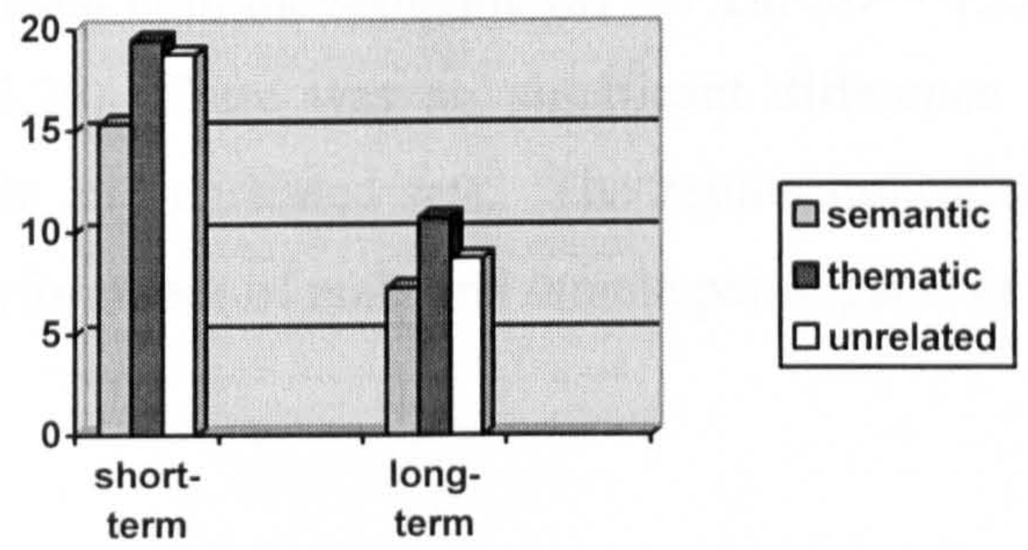


Figure 5.7: Mean Scores for the Post-and Follow-up Test Scores of the Female Participants



With regard to the male participants, analysis of the post-test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.475, F (2, 44) = 24.359, $p < 0.001$, Multivariate eta squared = 0.525. Pairwise comparisons of the post-test scores for the males showed that the thematic sets' mean score (M = 18.65, SD = 3.95) was significantly higher than the semantic sets (M= 14.98, SD = 5.18). The mean score for the unrelated sets (M = 18.24, SD = 4.41) was significantly higher than the semantic sets. There was no significant difference in the mean scores between the thematic and unrelated sets. Analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.704, F (2, 44) = 9.244, $p < 0.001$, Multivariate eta squared = 0.296. Pairwise comparisons of the follow-up test scores showed that the mean score for the thematic sets (M = 7.91, SD = 4.52) was significantly higher from both the semantic (M = 5.59, SD = 3.65) and unrelated sets (M = 5.91, SD = 4.44). There was no significant difference in the mean scores between the semantic and unrelated sets.

Regarding the female participants, analysis of the post-test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.476, F (2, 44) = 24.229, $p < 0.001$, Multivariate eta squared = 0.524. Pairwise comparisons of the post-test scores for the females showed that the thematic sets' mean score (M = 19.46, SD = 4.35) was significantly higher than the semantic sets (M = 15.33, SD = 5.72). The mean score for the unrelated sets (M = 18.76, SD = 4.44) was significantly higher than the semantic sets. There was no significant difference in the mean scores between the thematic and unrelated sets.

Analysis of the follow-up test scores revealed that there was a significant effect for the type of word sets, Wilks' Lambda = 0.601, F (2, 44) = 14.588, $p < 0.001$, Multivariate eta squared = 0.399. Pairwise comparisons of the follow-up test scores showed that the mean score for the thematic sets (M = 10.72, SD = 4.91) was significantly higher from both the semantic (M = 7.28, SD = 4.31) and unrelated sets (M = 8.72, SD = 5.26). There was no significant difference in the mean scores between the semantic and unrelated sets. The results indicated that there were no differences in the performance of male and female participants in the post-and follow-up tests.

5.5.5 Hypothesis 5

Premised on the assumption that the participants' performance in the post-and follow-up tests might be altered according to the order in which they are presented with the three different sets (i.e. semantic, thematic, and unrelated), Research Hypothesis 5 was as follows:

H5. The effects of presenting new lexical items in semantic, thematic, and unrelated sets will differ according to the order in which the sets are presented to the participants.

As explained earlier, the participants in the first experiment were divided into six groups, they were all given the same three sets of words every session, but in a different order (STU, SUT, TSU, TUS, UST, UTS) so as to control the primacy and

recency effects. A one-way between-groups analysis of variance was conducted to explore the effect of the order by which the three sets were presented to the participants on their performance in the post-and follow-up tests. The order of the sets was considered as an independent variable measured between-groups while the type of word sets was considered as an independent variable measured within-groups. Samples of 16 participants, i.e. the size of the smallest treatment group in Experiment 1, were randomly drawn from the remaining five groups.

The analysis of variance for the post-test scores did not reveal a significant difference between groups for order effects $F(5, 90) = 2.026, p < 0.082$. Similarly, The analysis of variance for the follow-up test scores did not reveal a significant difference between groups for order effects $F(5, 90) = 1.601, p < 0.168$. This finding suggests that there was no significant main effect for the order by which the sets were presented to the students.

In the following section, I will present the findings from the verbal reports elicited from the participants in Experiment 1.

5.5.6 The Findings from the Verbal Reports

As mentioned above (see 5.4.5), retrospective interviews were conducted with 45 participants in Experiment 1 to gain information about the ease and difficulty by which they perceived the three set types that they were required to learn in each session. In analysing the interview data, I imposed a predetermined set of categories: (1) semantic/easiest (reason), (2) thematic/easiest (reason), (3) unrelated/easiest (reason), (4) semantic/most difficult (reason), (5) thematic/most difficult (reason), and (6) unrelated/most difficult (reason). The students' comments were placed according to their content under these categories.

What these student self-reports reveal, interestingly, is that in contrast to Tinkham's participants (1993, 1997) (see 3.3.2 and 3.3.7), the majority of the participants in this experiment believed that the semantic sets were the easiest sets to learn, and that the most commonly perceived reason for the relative ease of the semantic sets was the similarity between the words, as will be illustrated below.

When asked which of the three sets of words they found most easy to learn, 27 participants (60%) identified the semantic sets as being the easiest to learn. In terms of reasons why presentation of new lexical items in semantic sets might be easier to learn, 20 out of the 27 asserted that the semantic sets were the easiest to learn and remember in the post-tests as the words within the sets were similar in meanings and centred around one topic:

> "Because their meanings were similar to each other, and they all dealt with one topic, this made them easier to learn." (S 42)

One participant suggested that the words were:

> " more interesting and useful than the others...all the words were about money, but still there were differences among them, and that was interesting to know." (S 20)

Another student gave a quite different reason:

> "The words in this group attracted my attention more than the other two groups. They forced me to memorise them and differentiate among their similar meanings... when word meanings are different, I forgot them after a short time. I like learning similar words together, even in our school English exams, we were usually given similar words and we were asked to differentiate between their meanings, so it's better to learn similar words together to be able to differentiate between them." (S 9)

Two students noted that the semantic sets were the easiest sets to learn just because they thought that they learned the words within the sets faster than the other two sets. The remaining three students were not able to identify why the semantic sets were easiest to learn than the others.

On the other hand, 11 students (24 %) were of the view that the thematic sets were the easiest to learn. Five students noted that they were able to use the words within the thematic sets in situations that helped them to remember the meanings of the words, as one participant reported:

> "It's just that I imagined a situation in which I used the words in this group while learning them, so this made me learn the words faster and remember them in the test." (S 29)

Another student reported that the words in the thematic set were easier to learn, as he was able to put them together in a sentence:

> "I learned them in a sentence, so it was easier for me to remember the words afterwards." (S 36)

Four students stated that the reason that the thematic sets were easier than the other two sets was that the words were related to each other. The remaining student could not identify a reason for her assertion that the thematic set was the easiest to learn.

Only four students (9%) reported the unrelated sets to be the easiest to learn without identifying specific reasons, and three students (6%) could not identify the easiest sets for them to learn.

In response to the question regarding which one of the three groups was the most difficult to learn, 24 out of the 45 participants (53%) identified the unrelated sets as being the most difficult set, 16 students asserted that the reason behind their difficulty was that there was no relation among the words within the unrelated sets, as one participant reported:

> "There wasn't any kind of relation or connection among the words" (S 2)

Eight students did not give a specific reason, only that they were difficult to learn and remember than other words, as one student stated:

> "It was difficult to differentiate them from each other in contrast to the other two groups which I remembered their meanings easier in the test." (S 22)

Eight participants (18%) identified the semantic sets to be the most difficult to learn. One participant could not identify the reason behind that. However, seven participants asserted that the similarity among the words caused difficulty and confusion, as one student reported:

> "They were so similar to each other so they confused me." (S 17)

Four students (9%) identified the thematic sets as being the most difficult sets to learn. One participant noted that the words within the thematic set were confusing.

The remaining three participants did not give reasons. Nine (20%) students could not identify which set was the most difficult one to learn.

5.6 Summary

In this chapter, I have presented the rationale behind conducting Experiment 1 in terms of avoiding the limitations of earlier empirical studies and exploring areas that have not been investigated before. I have outlined the research questions and hypotheses, and provided details of the piloting phase and its implications for the main study. I have also described the materials, instruments and procedures used within the experiment. Finally, I have presented the findings of the experiment, followed by the findings from the students' interviews in relation to their perceptions of the different set types (namely, semantic, thematic, and unrelated) with which they were presented in the learning sessions. In the following chapter I will present the design, data analysis and results of Experiment 2.

Chapter Six

Experiment 2: Design, Analysis, and Results

6.1 Overview

In this chapter, I present the rationale and design of Experiment 2. Details are provided on the piloting phase, participants, learning materials and procedures of data collection. I also discuss the ethical issues that I have considered throughout the empirical study. Finally, this chapter presents the statistical analysis and results for Experiment 2, followed by a summary of the main findings from the two experiments comprising the empirical study.

6.2 Rationale of Experiment 2

As illustrated in Chapter 5, the participants in Experiment 1 were given in each of the learning sessions three word sets constituting one list of words (mixed). This imposed a limit on the actual number of lexical items that could be presented within the three word sets, i.e. four words per set. It was suggested in a previous study (Petersen, 1995) that the number of words presented in a set might affect the participants' performance in the retention tests (see 3.3.4). Moreover, the studies conducted by Tinkham (1993, 1997) and Waring (1997) suggest that presenting the participants with a mixed list of words consisting of semantically related, thematically related, and unrelated words might lead to different results than when presenting the participants with separate lists. Therefore, in Experiment 2, the three types of word sets were presented separately to different groups of participants in order to investigate (1) whether there would be a difference in short-and long-term retention of new lexical items within the three types of sets when learned together and learned separately, and (2) whether the results of the experiment would be affected by using larger sets (9 vs. 4).

A further motivation for conducting this experiment was that, as explained in Chapter 3 (see 3.4.5), in all earlier empirical studies investigating the interference phenomenon, the participants were presented with lists of isolated words, whereas in real classroom situations, new words are usually presented to students in some sort of context. Therefore, one of the aims of this experiment was to investigate whether

contextualising lexical items within a semantic set would help to overcome the interference effects.

Finally, this experiment sought to investigate whether practising lexical items presented in a semantic set would reduce or eliminate the interference effects, as it has been illustrated in Chapter 3 (see 3.4.5), this issue has not been empirically investigated before.

Experiment 2 was designed to answer the following research questions (RQ):

RQ 1

Does the way in which new lexical items are grouped in different types of sets - semantic, thematic, unrelated- have different effects on the short-and long-term retention of the lexical items included in each set?

RQ 2

Does learning separate word lists (each comprising one set type and including more words than the sets in Experiment 1) instead of a mixed list of the three sets lead to different results from those of Experiment 1?

RQ 3

Does practising new lexical items presented in semantic sets help to overcome the interference effects (if indeed there are any)?

RQ 4

Does learning semantic sets in context help to overcome the interference effects (if indeed there are any)?

These research questions gave rise to the following research hypotheses:

Research Hypothesis 1

Participants presented with one set type only (i.e. semantic, thematic, or unrelated), but one which includes more lexical items than those in the sets presented in

Experiment 1 will score differently on the post- and follow-up tests compared to participants in Experiment 1 who were given a mixed word list of the three sets.

Research Hypothesis 2

Participants presented with semantic sets in which new lexical items are accompanied only by their meanings will score differently on the post-and follow-up tests compared to participants presented with semantic sets in which new lexical items and their meanings are integrated within a classroom vocabulary learning activity.

Research Hypothesis 3

Participants presented with semantic sets in which new lexical items are decontextualised will score differently on the post-and follow-up tests compared to participants presented with semantic sets in which new lexical items are contextualised.

6.3 The Piloting Phase

One session of the experiment was conducted with a third year group of students (N=34). This was the same group with which I conducted the learning session using the artificial words (Experiment 1, Session 2). In this experiment, there were three different groups of students, each receiving one word set type: semantic, thematic, or unrelated (separate).

a) Materials

Three types of learning sheets were prepared; each included a list of seven English words and their definitions. The first list included seven semantically related words: *larceny*, *mugging*, *pilfering*, *looting*, *plundering*, *embezzlement*, *plagiarism* (Appendix 6.1 (1)). The second list included seven thematically words: *larceny*, *slammer*, *crookedness*, *filcher*, *infringement*, *restitution*, *manacles* (Appendix 6.1 (2)). The third list included seven unrelated words: *larceny*, *consent*, *demission*, *frigate*, *interment*, *disparity*, *magnitude* (Appendix 6.1 (3)).

b) Procedures

After writing the words on the blackboard and checking that none of the words were known to the students, I divided the 34 participants into three groups (N=11, 11, 12).

Each group received one of the three word sets. The testing procedure was similar to that of Experiment 1 (see 5.3).

As illustrated in Chapter 5 (see 5.3.7), this piloting session along with the ones conducted within Experiment 1 helped to assess the adequacy of the design and to inform the number of words to be used in the learning sessions in the main study, in addition to the timing of these sessions.

6.4 Main Study: Experiment 2

Experiment 2 was conducted along with Experiment 1 in October and November of 2001. In Experiment 2, each of the treatment groups was given only one separate set type: semantic, thematic, or unrelated.

6.4.1 Participants

The second experiment was conducted with second year students (N=181). They were assigned randomly to five groups (N= 37, 36, 36, 36, 36).

6.4.2 Learning Materials: Experiment 2

The three types of word sets (semantic, thematic, and unrelated) used in Experiment 2 are given in Table 6.1 below.

Table 6.1: Word Sets Used in Experiment 2

Session	Semantic sets	Thematic sets	Unrelated sets
1	larceny, looting, pilfering, brigandage, mugging, plundering embezzlement, pillaging, rustling	larceny, infringement, slammer, booty, filcher, restitution, manacles, committal, crookedeness	larceny, magnitude, demission, consent, disparity, frigate, reverence, interment, fatigue
2	manducation, omophagy, voracity, grazing, nibbling, devouring, guzzling, chomping, munching	manducation, garnish, mandibles, banquet, recipe, savour, crockery, victuals, obesity	manducation, denizen, dexterity, poltroon, stroller, potency, succour, foliage, ailment
3	pongo, infantry, cavalry, besiegers, patrol, sapper, mercenary, sentinel, sentry	pongo, gallantry, conscription, rations, accoutrements, munitions, sniping, garrison, skirmish	pongo, jalopy, chastisement, arduousness, infirmary, censure, sapling, penury, chinwag
4	barque, skiff, sloop, wherry, ferry, trawler, pirogue, dinghy, tug	barque, pharos, flotsam, brine, helm, salvaging, berth, mooring, matelot	barque, tumbler, contagion, pledge, foe, sneakers, fags, pittance, abode
5	pelf, emolument, defrayment, wherewithal, remmitance, bequest, boodle, stipend, indemnity	pelf, profligacy, miser, mint, avarice, exorbitance, billfold, insolvency, opulence	pelf, ooze, penitence, aroma, emulation, diminution, fidelity, vagrant, pugilist
6	apparel, layette, pinafore, slacks, trousseau, redingote regimentals, mufti, livery	apparel, haberdashery, vogue seamstress, foppishness, loom, couture, drapery, detergent	apparel, blossom, vigour, tidings, peril, dromedary, betrothal, genocide, scribe

As illustrated above (6.2), one of the aims of this experiment was to investigate whether contextualising new L2 lexical items within a semantic set helps to overcome the interference effects. This required comparing the effects of learning lists of decontextualised semantically related words and lists of contextualised semantically related words on short-and long-term retention of these words. In this experiment, "context" was limited to sentences in which the target words were used to help illustrate the meanings of the words. Jullian (2000) notes that the use of illustrative sentences helps to depict the semantic content of the words by means of association with images. Further, there is empirical evidence (cf. Laufer and Shmueli, 1997) suggesting that the use of sentences or "minimal context" helps to focus the learners' attention on the target words and thus it is an effective method for the memorisation of new words.

I attempted to select sentences providing information that were likely to facilitate an understanding of the words' meanings. WordNet (see 2.5) and several dictionaries (see 5.4.2) were employed to select illustrative sentences. In addition, the sentences were checked for correctness and naturalness by my adviser and two native-speaker

research students, and in several cases they suggested alternative sentences that they thought would be better in illustrating the meanings of the target items.

Moreover, this experiment sought to investigate whether practising lexical items presented in a semantic set would reduce or eliminate the interference effects. This, in turn, required conducting a comparison between the effects of presenting the learners with semantic sets in which new lexical items are decontextuailsed and semantic sets in which new lexical items are integrated within an activity.

Although a considerable number of studies (e.g. Hulstijn, 1992; Luppescu and Day, 1993; Knight, 1994; Newton, 1995), as shown in Chapter 3 (see 3.4.5) have illustrated that providing learners with tasks requiring them to manipulate words should produce a deeper understanding of the words and should lead to high retention, no criteria for task effectiveness have been identified. Recently, Laufer and Hulstijn (2001) have proposed that tasks differ in the involvement load they generate. They further suggest that the involvement load is defined as the combination of the presence or absence of the following factors: *need*, *search*, and *evaluation* which they define as follows:

Need is concerned with the need of the learner to achieve; it is based on a drive to comply with the task requirements, whereby the task requirements can be either externally imposed (by the teacher), or self-imposed (by the learner). Laufer and Hulstijn have distinguished between moderate and strong need. Need is strong when it is self-imposed and moderate when it is imposed by an external agent.

Search is the attempt to find the meaning of an unknown L2 word by consulting a dictionary or another authority.

Evaluation entails a comparison of a given word with other words or a specific meaning of a word with its other meanings. Evaluation is considered moderate if it entails recognising differences between words, and strong if it requires the selection of a word among other words to be used in an original sentence or text.

Laufer and Hulstijn note that the concept of involvement can be operationalised by devising tasks with various degrees of need, search, and evaluation. Thus, they have

assumed that tasks with a higher involvement load (e.g. a task including the three involvement factors) will be more effective for vocabulary retention than tasks with a lower involvement load. In other words, the retention of unfamiliar words is conditional, in general, upon the degree of involvement in processing these words.

The task used in this experiment was a puzzle that involved thinking about the meaning of a word and creating elaborative attention to the words' formal and semantic features. The participants were given sentences in which the target items that they had just learned were deleted. In order to solve the puzzle, the learners were required to fill the gaps within the sentences with the correct items from the list of lexical items they had just learned.

Taking the three components of involvement suggested by Laufer and Hulstijn (2001), the puzzle task would seem to induce a moderate need, as the need to solve the puzzle was imposed by the researcher, no search (the words were explained) and a moderate evaluation, since all the words in the list had to be evaluated against each other and the context of the gaps, but the participants were not required to produce original language.

Five types of learning handouts were prepared for the five treatment groups as illustrated in Table 6.2 below.

Table 6.2: Types of Word lists Used in Experiment 2

Group	Type of word lists
1	semantic sets accompanied by definitions + puzzles
2	semantic sets accompanied by definitions and examples
3	semantic sets accompanied by definitions only
4	thematic sets accompanied by definitions and examples
5	unrelated sets accompanied by definitions and examples

Description of the learning materials for each group are presented below:

6.4.2.1 Learning Materials for Group 1

This group was given a semantic set in each of the six learning sessions. The participants were given a 4-page handout in each session (Appendices 6.2 (1) to 6.2 (6)). The first page was a title sheet similar to the one used in Experiment 1 (included

in Appendix 6.2 (1)). The second page included the lexical items constituting the semantic set paired with their English meanings. The third page included a puzzle which the students were asked to solve by using the target items they had just learned in the session. As mentioned above, the clues for the puzzle were sentences with missing words. The fourth page was a blank sheet.

6.4.2.2 Learning Materials for Group 2

The participants in Group 2 were presented with the same semantic sets given to Group 1. However, they were not given a task to solve after learning the words. They were given a 3-page handout in each session (Appendices 6.3 (1) to 6.3 (6)). The first page was a title sheet (included in Appendix 6.3 (1)). The second page included semantically related items paired with their English meanings and followed by example sentences. The third page was a blank sheet.

6.4.2.3 Learning Materials for Group 3

The participants in Group 3 were required to learn the same semantic sets given to Groups 1 and 2, but they were given only definitional information. They were given a 2-page handout in each session (Appendices 6.4 (1) to 6.4 (6)). The first page included the instructions followed by the target words paired with their English definitions. The second page was a blank sheet.

6.4.2.4 Learning Materials for Group 4

Group 4 was given a thematic set in each of the six learning sessions. A 3-page handout was distributed to the students in each session (Appendices 6.5 (1) to 6.5 (6)). The first page was a title sheet (included in 6.5 (1)). The second page included the lexical items paired with their English definitions and followed by example sentences. Page 3 was a blank sheet.

6.4.2.5 Learning Materials for Group 5

This group was required to learn sets of unrelated words. A 3-page handout was distributed to the students in each session (Appendices 6.6 (1) to 6.6 (6)). The first page was a title sheet (included in 6.6 (1)). The second page included the target words paired with their English meanings and followed by example sentences. The third page was a blank sheet.

6.4.3 Procedures

Similar to Experiment 1, all the learning and testing sessions were administered in a large lecture room. I met the students to conduct the learning and testing sessions on Saturdays and Thursdays for four weeks. Each group was given a number (1-5) that was written on their learning and testing sheets. Again the students within each group were asked to sit together in the learning and testing sessions and to memorise their group numbers.

This experiment consisted of similar learning and testing stages as Experiment 1. The learning stage constituted six vocabulary learning sessions. I started each session by writing the words of the three sets on the blackboard to ensure the novelty of the words for the students. Again, I did not need to use any of the reserve words in the six sessions.

In the first session, I gave the participants of the five groups general instructions. I then gave the first group the instructions concerning solving the puzzle separately. The participants were told that they would be given a set of nine lexical items in each learning session. They were told that they would have to learn all the words in three minutes and they would be tested on them at the end of each session. The nature of the test was described to the participants. The participants were told that if they wanted to write down the words while learning them, they should use the blank sheet provided in the handout. Group 1 was told that they had to start solving the puzzle while I was collecting the handouts from the other four groups. No time limit was given for solving the puzzle.

The post-tests were administered to all the participants (i.e. the five groups) immediately after collecting the learning handouts from Group 1. Follow-up tests were conducted a week after each session. In both tests, students were asked to give the meanings of the target items (Appendices 6.2 (1) to 6.6 (6)). For each learning session, two scores were obtained for each participant: the post-test score and the follow-up test score. Similar to Experiment 1, scoring was conducted in terms of correct (1 point) or incorrect/blank (0 points). I added up the scores for the two tests for each of the five sets in the six learning sessions. Thus, the maximum score for each set in the two tests was 54.

6.5 Ethical Considerations

In this section, I turn to issues of ethicality. Three key ethical areas tend to be highlighted for consideration in social research, that is the harm and benefits it may bring to participants, whether informed consent has been gained regarding all areas of research process, and guarantees of privacy and confidentiality (e.g. Kelman, 1982; Singleton, 1993; Kvale, 1996; Mason, 1996; Miles and Huberman, 1994).

In conducting the two experiments and the students' interviews, there was no danger of harm or deception to the participants, and I assume that they would derive some benefit from the experiments in the learning of new words. The participants were told that by participating in the experiments, they would learn some low-frequency words that they might encounter later in their studies, for example, in their translation tests (from the researcher experience as a student in the same department, translation tests usually included very low-frequency words to be guessed from context), or they could use these words in their essay tests to show a good level of vocabulary knowledge. I promised the participants to give them all the learning materials after the last session, and I kept my promise. Similarly, to encourage the participants to complete the proficiency and vocabulary size tests, I promised those interested in knowing their scores to mark their tests and give them their scores, and I did that.

Regarding informed consent, the participants were informed of the aim of the research, and they were assured that their participation was not compulsory, and all who participated gave their consent orally to be part of the research. In addition, the participants were aware that they could withdraw from the research experiments at any time. In terms of the verbal reports, the participants either volunteered or agreed to be interviewed, while being assured that they had every right to decline.

Turning to the question of privacy, I interviewed the participants to investigate their attitudes towards learning different types of word sets, thus the questions did not include any questions of a personal nature. In terms of confidentiality, the participants were assured that their tests scores would be used solely by me for research purposes, and that they would not be seen by any of their tutors. They were also assured that in any publications of the results, their data would be completely anonymous.

6.6 Analysis and Results

Similar to Experiment 1, the computational work for all the statistical testing in this Experiment was performed using SPSS. There were 121 complete sets of data in this experiment as 61 participants were removed from the investigation because of incomplete data. Data analyses and their results are reported for each hypothesis in the following subsections.

6.6.1 Hypothesis 1

Premised on the assumption that presenting the participants with separate word sets that include more words than the sets presented in Experiment 1 might lead to different results than Experiment 1 in which the participants were presented with a mixed word list including the three set types (i.e. semantic, thematic, and unrelated), Research Hypothesis 1 was as follows:

H1. Participants presented with one set type only (i.e. semantic, thematic, or unrelated), but one which includes more lexical items than those in the sets presented in Experiment 1 will score differently on the post-and follow-up tests compared to participants in Experiment 1 who were given a mixed list of the three sets.

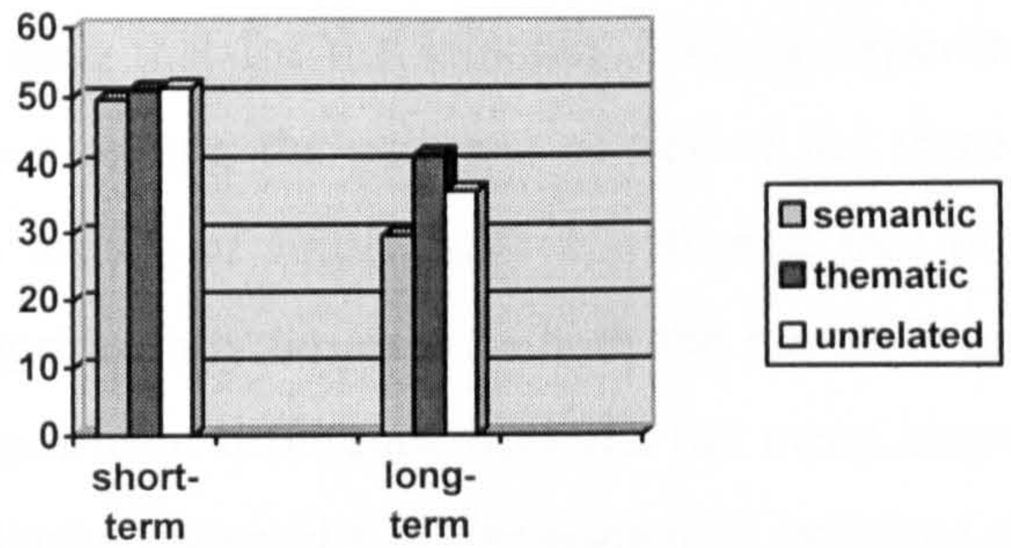
To examine this hypothesis, the scores of Group 2 (learning semantic sets), Group 4 (learning thematic sets) and Group 5 (learning unrelated sets) were compared. A one-way between groups ANOVA was conducted to explore the impact of the different types of word sets (independent variable) on the participants' scores (dependant variable), as measured by the post-and follow-up tests. Samples of 21 participants (the size of the smallest group, i.e. Group 2) were randomly drawn from the other two groups. The descriptive statistics are presented in Table 6.3 (see Figure 6.1).

Table 6.3: Means and Standard Deviations for the Post-and Follow-up Test Scores of Groups 2, 4, and 5

Groups	Short-term		Long-term	
	mean	SD	mean	SD
Group 2	49.62	5.48	29.52	11.25
Group 4	50.95	3.80	41.33	4.88
Group 5	51.24	2.72	36.05	9.05

Key:
Group 2: learning semantic sets (6.4.2.2)
Group 4: learning thematic sets (6.4.2.4)
Group 5: learning unrelated sets (6.4.2.5)

Figure 6.1: Mean Scores for the Post-and Follow-up Test Scores of Groups 2, 4 and 5



There was no statistically significant difference in the post-test scores F (2, 60) = 0.907, $p < 0.409$. However, there was a statistically significant difference in the follow up test scores F (2, 60) = 9.493, $p < 0.001$ as indicated in Table 6.4 below.

Table 6.4: Vocabulary Acquisition Scores across Groups 2, 4, and 5

Source of Variance	*SS*	*df*	*MS*	*F*
Post-tests				
Between Groups	31.365	2	15.683	0.907
Within Groups	1037.714	60	17.295	
Follow-up tests				
Between Groups	1469.746	2	734.873	9.493
Within Groups	4644.857	60	77.414	

To determine the effect size or strength of association (the strength of the difference between groups in the follow-up tests), eta squared was calculated by dividing the sum of squares between-groups by the total sum of squares. The resulting eta square value for the follow-up test scores was 0.24, which in Cohen's (1988) terms would be considered a large effect size. I have chosen to use Dunnett's C as a multiple

comparison procedure, as it is recommended by Field (2000) for keeping very tight Type 1 error control (see 5.5.1). The follow-up test scores of Group 2 (learning semantic sets), Group 4 (learning thematic sets) and Group 5 (learning unrelated sets) were compared. The analysis revealed that the thematic sets ($M = 41.33$, $SD = 4.88$) brought significantly greater gains than the semantic sets ($M = 29.52$, $SD = 11.25$), whereas the scores of the participants in Group 2 and Group 5 ($M = 36.05$, $SD = 9.05$) did not significantly differ. Similarly, there were no significant differences in the performance of Groups 4 and Group 5.

A comparison of the results of the two experiments reveals that while the mean score for both the thematic and unrelated sets in the post-tests in Experiment 1 was significantly higher than that for the semantic sets, in Experiment 2, there were no significant differences among the post-test scores of the three groups. As for the follow-up tests, the results of Experiment 1 indicated that the mean score for the thematic sets was significantly larger than both the semantic and unrelated sets, and that there was no significant difference between the mean score of the semantic and unrelated sets. Similarly, the results of Experiment 2 indicated that the mean score of the thematic sets was significantly larger than the semantic sets and that there were no significant differences between the mean score of the semantic and unrelated sets. However, there were no significant differences between the mean scores of the thematic and unrelated sets.

6.6.2 Hypothesis two

Premised on the assumption that participants who were given a puzzle to solve after learning the semantic sets might score differently on the post-and follow-up tests than those who were given semantic sets in which new lexical items were accompanied only by their meanings, Research Hypothesis two was as follows:

H2. Participants presented with semantic sets in which new lexical items are accompanied only by their meanings will score differently on the post-and follow-up tests compared to participants presented with semantic sets in which new lexical items and their meanings are integrated within a classroom vocabulary learning activity.

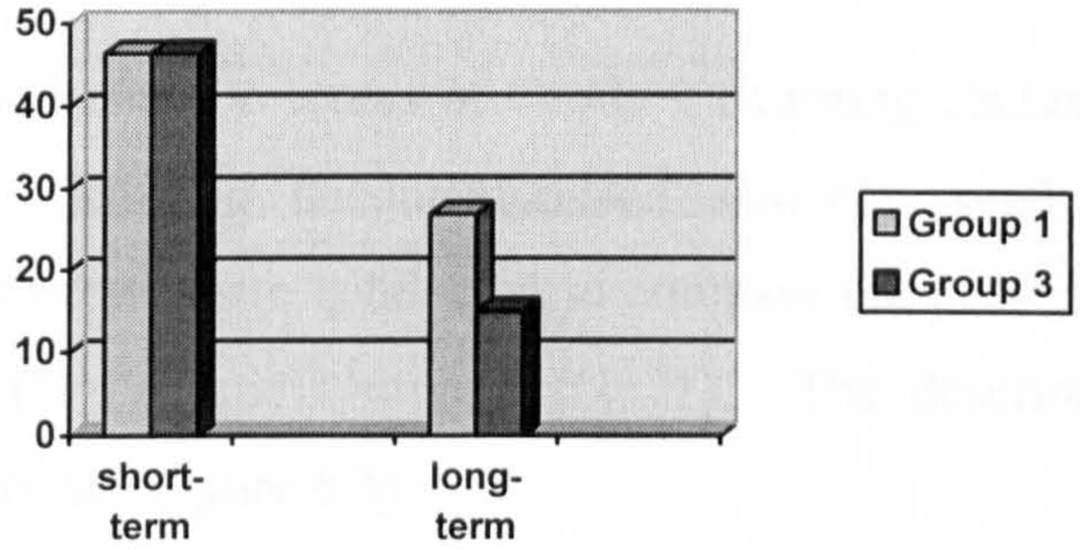
To examine this hypothesis, the scores of Group 1 (learning semantic sets followed by puzzles), and Group 3 (learning decontextualised semantic sets) were compared. I had complete data sets for 27 participants in Group 1 and 21 participants in Group 3, thus six participants from Group 1 were eliminated randomly. Independent-samples t-tests were conducted to compare the post-and follow-up test scores of Groups 1 and 3. The descriptive statistics are presented in Table 6.5 (see Figure 6.2).

Table 6.5:Means and Standard Deviations for the Post-and Follow-up Test Scores of Groups 1 and 3

Groups	Short-term		Long-term	
	mean	SD	mean	SD
Group 1	46.43	6.76	27.00	10.51
Group 3	46.52	6.85	15.05	6.86

Key:
Group 1: learning semantic sets followed by puzzles (6.4.2.1)
Group 3: learning decontextualised semantic sets (6.4.2.3)

Figure 6.2: Mean Scores for the Post-and Follow-up Test Scores of Groups 1 and 3



There was no significant difference in the post-test scores for Group 1 ($M = 46.43$, $SD = 6.76$), and Group 3 ($M = 46.52$, $SD = 6.85$); $t\ (40) = -\ 0.045$, $p < 0.964$. However, the results of an independent-samples t-test which was conducted to compare the follow-up test scores of the two groups revealed that participants in Group 1 ($M = 27.00$, $SD = 10.51$) scored significantly higher on the vocabulary follow-up tests than participants in Group 3 ($M = 15.05$, $SD = 6.86$); $t\ (40) = 4.364$, $p < 0.001$. In order to calculate the strength of effect, the eta squared value was calculated.

$$\text{Eta Squared} = \frac{t^2}{t^2 + (N1 + N2 - 2)} = \frac{4.36^2}{4.36^2 + (21 + 21 - 2)} = 0.32$$

An eta squared value of 0.32 indicates that there was a very large effect. This implies that participants who were given the opportunity to practice the lexical items presented in semantic sets did remember significantly more words than participants who were given only definitional information.

6.6.3 Hypothesis Three

Premised on the assumption that participants who were given semantic sets in which new lexical items are decontextualised might score differently on the post-and follow-up tests than participants who were given semantic sets in which new lexical items were accompanied by example sentences, Research Hypothesis three was as follows:

H3. Participants presented with semantic sets in which new lexical items are decontextualised will score differently on the post-and follow-up tests compared to participants presented with semantic sets in which new lexical items are contextualised.

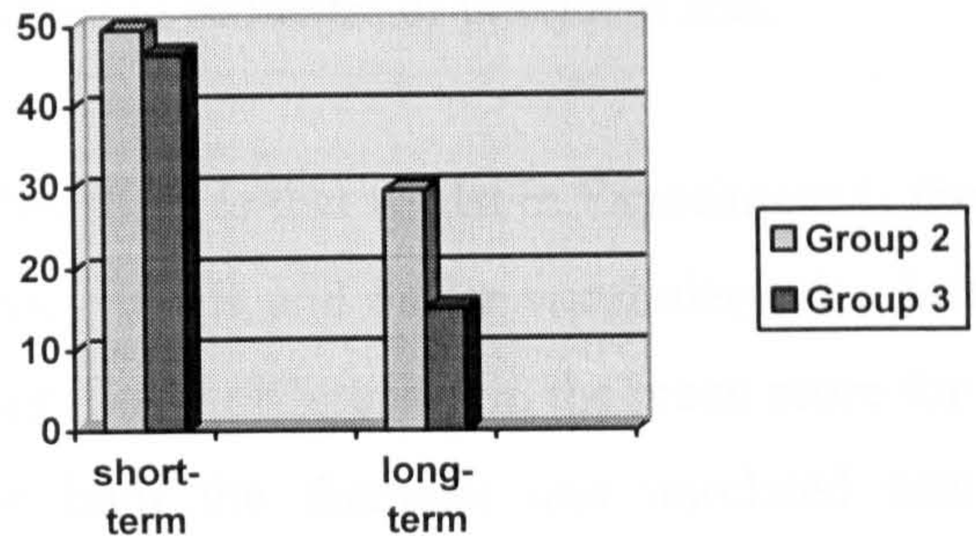
To examine this hypothesis, the scores of Group 2 (learning contextualised semantic sets) and Group 3 (learning decontextualised semantic sets) were compared. Independent-samples t-tests were conducted to compare the post- and follow-up test scores of Group 2 (N=21) and Group 3 (N=21). The descriptive statistics are presented in Table 6.6 (see Figure 6.3).

Table 6.6:Means and Standard Deviations for the Post-and Follow-up Test Scores of Group 2 and Group 3

Groups	Short-term		Long-term	
	mean	SD	mean	SD
Group 2	49.62	5.48	29.52	11.25
Group 3	46.52	6.85	15.05	6.86

Key:
Group 2: learning contextualised semantic sets (6.4.2.2)
Group 3: learning decontextualised semantic sets (6.4.2.3)

Figure 6.3: Mean Scores for the Post-and Follow-up Test Scores of Groups 2 and 3



There was no significant difference in the post-test scores for Group 2 ($M = 49.62$, $SD = 5.48$), and Group 3 ($M = 46.52$, $SD = 6.85$); $t\ (40) = 1.616$, $p < 0.114$. However, the results of an independent-samples t-test which was conducted to compare the follow-up test scores of the two groups revealed that participants in Group 2 ($M = 29.52$, $SD = 11.25$) achieved a significantly higher mean score than participants in Group 3 ($M = 15.05$, $SD = 6.86$) on the follow-up tests; $t\ (40) = 5.036$, $p > 0.001$. The magnitude of the differences in the means was very large (eta squared = 0.39). This implies that although the scores of Groups 2 and 3 did not differ significantly in the post- tests, participants in Group 2 who were given example sentences in which the semantically related items were used did remember significantly more words than participants in Group 3 who were only given definitional information.

6.7 Summary of the Results of the Two Experiments

The results of the analysis reveal that there were differences between the two experiments in terms of the participants' performance in the post-tests. Whereas the mean score for both the thematic and unrelated sets in the post-tests in Experiment 1 was significantly higher than the semantic sets, there were no significant differences among the scores of the three groups learning the three different sets in Experiment 2.

However, the results of the follow-up tests in both experiments revealed that long-term retention was better when words were learned in thematic sets. The only difference between the results of the two experiments in terms of long-term retention is that while in Experiment 1, retention of words presented in thematic sets was significantly better than words presented in unrelated sets, in Experiment 2, the mean score for the thematic set was higher than the unrelated set but not to a significant extent. The data presented by the two experiments present a clear indication that new

L2 vocabulary items arranged in thematic sets are better remembered than new vocabulary items learned in semantic or unrelated sets.

Another finding of this study is that whilst in Experiment 1, the results for participants with higher proficiency levels and larger vocabulary size in the post-tests indicated that there were no significant differences in the mean score for the three different sets, the mean score for both the thematic and unrelated sets in the post-tests for participants with lower English proficiency level and more limited vocabulary size was significantly higher than the semantic sets. This finding might indicate that presenting new semantically related words to advanced learners does not hinder their learning initially.

A further finding of the study is that learning semantically related words in context, or practising them afterwards seems to reduce the interference effects. The data of Experiment 2 revealed that participants who learned semantic sets in which the words were followed by illustrative sentences or practised the words within the semantic sets by solving the puzzles did perform significantly better than participants learning decontextualised semantic sets in the follow-up tests.

6.8 Summary

In this chapter, I have presented the rationale and design of Experiment 2, and related this to the piloting phase. I have outlined the research questions, hypotheses, learning materials and procedures, and also provided details of the ethical considerations that have been taken into account for the empirical study. I have also presented the data analysis and results for each of the hypotheses for this experiment. Finally, I have presented a summary of the results of the two experiments.

As the two experiments within this research were conducted with Egyptian students, I felt it was important to investigate the sequencing of new vocabulary items within the ELT textbooks used in Egypt in order to be able to draw conclusions from the findings of this research for the Egyptian context. Thus, in the following chapter, I present my analysis of the vocabulary content of the ELT textbooks used in Egyptian schools, in addition to the findings from the teacher interviews that were conducted to

gain insights mainly into the teachers' perceptions with regard to sequencing new vocabulary items according to meaning similarity.

Chapter 7

Vocabulary Sequencing in the Egyptian Context

7.1 Overview

This chapter presents the main findings from my analysis of the vocabulary content of the ELT textbooks used in Egyptian schools in an attempt to explore the methods by which new vocabulary items are sequenced in these textbooks.

Further, this chapter presents the findings of the interviews conducted with Egyptian teachers of English which were aimed mainly at gaining insights into the teachers perceptions of different methods of vocabulary sequencing, especially with regard to presenting new L2 lexical items in semantic sets.

7.2 The Teaching of English as a Foreign Language in Egypt

In Egypt, children - at the age of six - attend primary school which is of five years duration. At the age of eleven they move to preparatory school for a further three years. At the age of fourteen, pupils then attend secondary school for another three years. The learning of English begins in the fourth grade in the preparatory school and continues through the secondary stage, i.e. the Egyptian students learn English for a total of eight years. The prescribed textbook in each of these three stages is "Hello", and is produced by the Ministry of Education in Egypt (Dallas, 1994, 1995, 1996, 1997, 1998; Dallas and Gomm, 1999, 2000, 2001).

7.3 Rationale for the Investigation

The primary aim for this investigation was to analyse the vocabulary content of the "Hello" series used in Egyptian schools for teaching the English language to find out how new English vocabulary items are generally sequenced through the three phases of education. This represents a crucial dimension to my research, as the experiments within the research were conducted with Egyptian students (see 5.3.1). Thus, in order to be able to draw implications from the findings to the Egyptian context, there was a need to investigate how new English vocabulary items are actually sequenced to Egyptian students.

7.4 Vocabulary Sequencing in the "Hello" Series

7.4.1 Method of Analysis

To investigate the way in which new vocabulary items are sequenced in the "Hello" series, I analysed the vocabulary component of these textbooks, as well as the workbooks at the primary, preparatory, and secondary stages (Appendices 7.1-7.8). In addition to the analysis of the students' textbooks, the Teacher's Guide for each textbook was also used to help in identifying the new vocabulary items in each lesson, and to investigate the guidance given to the teachers with regard to vocabulary presentation.

In analysing the vocabulary content of the textbooks, I found that groupings of new lexical items presented to the learners could be identified as being paradigmatic (i.e. semantic), syntagmatic (i.e. thematic or collocational), or unrelated (see 2.3.3). Additionally, phonological/orthographic groupings do occur in the primary phase. In the following section, I am going to identify the criteria I used to identify each type of grouping in the analysis.

7.4.2 Analytic Criteria

Vocabulary items in a lesson were identified as belonging to paradigmatic groupings if they shared direct similarity in their meanings and belonged to the same word class (see 2.3.1). For example, among the paradigmatic relations found in the analysis were synonyms (e.g. *repair* and *fix* in unit 6 in third year of the secondary phase), opposites (e.g. *poverty* and *wealth* in unit 4 in the second year of the secondary phase), and co-ordinates (e.g. *skirt*, *blouse*, *pullover* in unit 4 in the second year of the primary phase).

Following Kittay and Lehrer (1992), vocabulary items were identified to belong to syntagmatic groupings if they share either collocational or thematic relations. Thus, for example, *brush* and *teeth* in unit 21 in the fourth year of the primary stage are considered a syntagmatic grouping as they usually collocate with each other. Similarly, *wedding*, *cake*, and *sherbet* in unit 8 in the first year of the primary phase are considered as a syntagmatic grouping as they share thematic ties.

Vocabulary items within a lesson that shared neither paradigmatic nor syntagmatic relations were identified as an unrelated grouping (e.g. *play*, *sell*, and *walk* in unit 4 in the first year of the preparatory phase).

Further, in the primary phase, groupings of vocabulary items sharing phonological or orthographic similarities which are presented together to the learners to reinforce the learning of a certain sound or letter were classified as phonological/ formal groupings. For example, the words *beans*, *near* and *hear* were presented together in unit 14 in the second year of the primary stage. Similarly, the words *fat*, *fan*, and *fish* were presented together in unit 8 in the first year of the primary stage.

In order to arrive at a numerical representation of the methods by which new lexical items are sequenced to Egyptian students, I counted the number of each type of grouping within a textbook, and calculated its percentage with regard to the total number of word groupings within the textbook. In the following sections, I present the results of this analysis for the primary, preparatory and secondary phases (7.3.3-7.3.5). This is followed by a discussion of results of the analysis in 7.3.6.

7.4.3 Lexical Sequencing: Primary Phase

The first set of analysis relates to the ways in which vocabulary items are sequenced in the primary phase of education where students learn English in years 4 and 5. Tables 7.1 and 7.2 illustrate the percentage of each grouping type (see 7.3.2) in which new lexical items are presented to the students in the fourth and fifth year of the primary stage.

Table 7.1: Percentages of Different Grouping Types within Year 4 of the Primary Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings	Number of orthographic/ phonological groupings
88	36	12	30	10
Percentage	40.90%	13.63%	34.09%	11.36%

Table 7.2: Percentages of Different Grouping Types within Year 5 of the Primary Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings	Number of orthographic/ phonological groupings
88	27	13	39	9
Percentage	30.68%	14.77%	44.31%	10.22%

Tables 7.1 and 7.2 reveal that within the primary phase, the majority of new lexical items are presented to the students in either paradigmatic or unrelated groupings. Further, the tables reveal that the students also encounter phonological/orthographic and thematic groupings much less than they encounter semantic and unrelated groupings.

The trend to present the students with new words sharing semantic features at the same time in the primary phase is obvious (see Appendices 7.1 and 7.2). Semantically related items are often presented in a decontextualised manner accompanied by pictures under the headings "Learn these words" or "Listen and repeat". Sets of words falling under a common superordinate or covering term (be it labelled or not) are often presented together to the students. The students are asked to learn parts of the body, clothes, foods, jobs, colours, shapes, family members, places in the community, days of the week, months, seasons, weather's conditions, animals, kitchen items, meals, and sports. Further, the students are often presented with verbs sharing semantic features, for example, *dust*, *wash*, *sweep / plough*, *plant*, *harvest /* and *quarrel*, *fight*. New vocabulary items acting as opposites are also frequently presented. For example, *left*, *right / yes*, *no / stand*, *sit / tall*, *short/ fat*, *thin / safe*, *dangerous / question*, *answer / quite*, *noisy /* and *above*, *below*.

In regard to syntagmatic groupings, new vocabulary items that usually collocate with each other are presented in the textbooks of the primary stage in phrases accompanied by pictures. For example, *kick*, *ball / watch*, *TV / brush*, *teeth / fly*, *kite / toothpaste*, *tube / listen*, *radio /* and *bar*, *soap*. New vocabulary items sharing thematic ties begin to appear in the primary stage when the students are presented with short reading passages and dialogues made up of separate and simple sentences that centre around one theme or topic. For example, within a reading passage entitled "At the Wedding", the students are given several sentences accompanied by pictures describing different

aspects of a typical Egyptian wedding. The new vocabulary items within the passage are: *clap*, *sing*, *dance*, *band*, *cake*, and *sherbet*. In a unit entitled "Grandfather's Farm", the students are required to learn the words *field*, *pump*, *water*, *river*, and *flowers*. Under the title "On the Road", the students are presented with the words *road*, *pavement*, *traffic lights*, *stop*, *wait*, *go*, and *cross*. Under the title "Shopping", the learners are given the words *shopping*, *buy*, *change*, *candles*, *matches*, and *piastres*. Similarly, in a passage about a building site, the students are introduced with the words *builder*, *machine*, *pour*, *cut*, *carry*, *pull*, *split*, *wood*, *blocks*, and *stone*.

With regard to phonological/orthographic groupings, these appear in lessons aiming to introduce certain phonemes or letters to the students to practice them. Thus, the students are presented with word groupings that are unrelated in meanings but share certain sounds or letters. There are often presented with this type of grouping under the heading "Look and Say", and they are given each word accompanied by a picture. For example, *cat*, *hat*, *rat* / *pen*, *hen*, *ten* / *pin*, *tin* / *top*, *dog*, *pot* / *bun*, *gun*, *sun* / *fat*, *fan*, *fish*/ *jam*, *jacket*, *jump*/ and *question*, *quarter*, *mosque*.

As for unrelated groupings, they appear along with thematic groupings in reading passages. They also occur in a decontextulised manner accompanied by pictures and in songs.

In summary, the analysis reveals that learners in the primary phase of education are presented with most of their new vocabulary in either unrelated or semantic groupings.

7.4.4 Lexical Sequencing: Preparatory Phase

The following sets of analyses relate to the ways in which new lexical items are sequenced in the preparatory phase of education.

Table 7.3: Percentages of Different Grouping Types within Year 1 of the Preparatory Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings
89	34	7	48
percentage	38.20%	7.86%	53.93%

Table 7.4: Percentages of Different Grouping Types within Year 2 of the Preparatory Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings
70	15	8	47
percentage	21.42%	11.42%	67.14%

Table 7.5: Percentages of Different Grouping Types within Year 3 of the Preparatory Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings
59	7	8	44
percentage	11.76%	13.55%	74.57%

Table 7.3 reveals that, in a similar fashion to the primary phase, students in the first year of the preparatory stage are frequently presented with new lexical items in paradigmatic and unrelated groupings. Tables 7.4 and 7.5 suggest that most of the new vocabulary items are sequenced to the students in the second and third year of the preparatory phase in unrelated groupings. However, paradigmatic and syntagmatic groupings of new lexical items still occur occasionally in the second and third year of the preparatory phase.

The trend towards presenting the learners with co-ordinates falling under a common superordinate seems to continue in the first and second grades of this stage. The students are required to learn subjects, relatives, directions, countries, capitals, nationalities, languages, materials, senses, places in the community, tools, instruments, sea creatures, sports, and food components (see Appendices 7.3 and 7.4). Further, within the three years of the preparatory phase, new lexical items acting as opposites are presented together, for example, *float, sink / hungry, thirsty / active, passive / wife, husband / shallow, deep / backwards, forwards / pay, earn / cool, heat / intelligent, stupid / import, export / accept, refuse/* and *negative, positive.* Words

sharing tight semantic features are also presented together throughout the preparatory stage, for example, *listen, speak, read / carry, lift / size, weight / picnic, trip.*

With regard to syntagmatic groupings, new thematically related words are presented together in some reading passages. For example, in a reading passage entitled "oil", the words *oil, petrol, kerosene, pipes* are sequenced together. Similarly, in a passage entitled "Mining in the Old Days", the words: *mine, coal, burns* are presented to the students. In a passage about football, the students are presented with the words: *World Cup, competition, finals, and rules.* In a passage entitled "The Dessert Comes to Life", the students are required to learn the words *irrigate, ditch, crops, well.* Similarly, in a passage entitled "Process of Making a T.V. Programme", the words *cameraman, editor, broadcast, viewers* are included. Further, new words that are likely to collocate with each other also occur together in the preparatory phase, for example, *solve, problem* and *insect, bite.*

Unrelated groupings of words are introduced in reading passages, riddles, rhymes, and dictionary work in which the students are given separate sentences, each including a new word and asked to guess the meaning of the word from the meaning of the whole sentence.

In summary, in the first year of the preparatory phase, new vocabulary items are mainly sequenced to the students either in semantic or unrelated groupings. In the second and third years, less paradigmatic groupings are presented to the students, and they seem to learn most of the new vocabulary items in unrelated groupings.

7.4.5 Lexical Sequencing: Secondary Phase

The final sets of analyses relate to the way in which new lexical items are sequenced in the secondary phase of education. In tables 7.6-7.8 below, I present the results of the analyses.

Table 7.6: Percentages of Different Grouping Types within Year 1 of the Secondary Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings
81	14	14	53
percentage	17.28%	17.28%	65.43%

Table 7.7: Percentages of Different Grouping Types within Year 2 of the Secondary Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings
83	20	11	52
percentage	24.09%	13.25%	62.65%

Table 7.8: Percentages of Different Grouping Types within Year 3 of the Secondary Phase

Total number of new word groupings	Number of paradigmatic groupings	Number of syntagmatic groupings	Number of unrelated groupings
73	9	12	52
percentage	12.32%	16.43%	71.23%

It is observed from Tables 7.6-7.8 that syntagmatic and paradigmatic groupings of new lexical items occur occasionally throughout the three years of the secondary phase. However, the general trend of sequencing new vocabulary items within the secondary phase seems to be in unrelated groupings.

Students in the secondary phase are still presented with sets of new vocabulary items falling under a common superordinate. They are required to learn for example, computer words, telephoning words, kinds of birds, personal characteristics, airport vocabulary, world currencies, verbs of building, jobs in medicine, medical vocabulary, scientific instruments, attributes of animals, health problems, and kinds of music. Further, they are presented occasionally with new words acting as opposites throughout the three years, for example, *rotten, delicious / increase, decrease / profit, loss / joy, sorrow / wealth, poverty.* New lexical items sharing semantic features are also sequenced together to the students throughout the three stages, for example, *snarl, groan / bath, shower / cheat, deceive / repair, fix / widow, orphan /* and *dawn, sunset.*

With regard to syntagmatic groupings, in this phase, students are required to learn groupings of thematically related words appearing in some of their reading passages. For example, a passage entitled "Clean Cars are Coming" includes the words *exhaust*, *gases*, *vehicles*, *badly-maintained*, *diesel*, *battery*, and *traffic jam*. Similarly, under the title "People at Work", the students are presented with the words: *organisation*, *employer*, *colleagues*, *customers*, and *fax*. Further, collocating new vocabulary items also occur in this stage, for example, *scorpion*, *sting / whip*, *lashes /* and *commit*, *crime*.

As the reading passages given to the students in the secondary phase become more complicated, each dealing with various aspects, the students are presented largely with groupings of unrelated words.

To sum up, it is clear that the students within the secondary phase learn most of the new vocabulary items in unrelated sets. Paradigmatic and syntagmatic groupings of new vocabulary items still occur occasionally within the textbooks, but the majority of the new vocabulary items appear in unrelated groupings.

7.4.6 The Semantic Approach to Vocabulary Sequencing in the "Hello" Series

The above analyses of the different approaches to sequencing new vocabulary items in the "Hello" series in the three phases of education (see tables 7.1-7.8) show that the general trend in the primary phase and the first year of the preparatory stage is presenting new vocabulary items to the students in either semantic or unrelated groupings. In the second year of the preparatory phase, most of new vocabulary items are learned in unrelated sets, with this trend continuing until the third year of the secondary phase. The trend of sequencing new lexical items in semantic sets declines in the preparatory and secondary phases mainly as a result of the completeness of the most common semantic sets, i.e. colours, jobs, foods, clothes, family members, etc., and presenting the students with more complicated reading passages. However, the preference of the textbooks' writers to present the students with new words in semantic sets in the three phases of education is evident for the following reasons:

Firstly, it is a common practice in the textbooks analysed throughout the three phases of education to introduce the students with new items that are semantically related to

the ones existing in the reading passages. For example, in the fifth year of the primary phase, a story in which only the words *ladder, hammer* and *nails* are presented, is preceded by pictures of these three tools in addition to *saw*, *drill*, *scissors*, which are not used in the story, and the students are required to learn the names of these tools. Similarly, in the first year of the secondary phase, the students are required to learn the names of scientific instruments because the main reading passage in the unit entitled "Famous Modern Egyptians" centred around an Egyptian scientist. In the same textbook, the students are given a story occurring in an airport including two words representing places in the airport, thus in the following lesson, they are given a picture of an airport accompanied by names of different places in an airport, although they are not used in the story. Similarly, in the second year of the secondary stage, the students are given pictures representing words of different sports, as the following lesson includes a passage entitled the "Olympic Games" presenting some of these words. In the same textbook, the students are given a picture of a computer referring to its different components, as the following lesson includes a passage titled "The Internet is for Everyone" in which none of these computer words are used. Moreover, in another unit, the students are given weather words in the vocabulary section as the following lesson includes a passage titled "Global Warming", although again none of these weather words are used in the passage. In the third year of the secondary phase, the students are given in the vocabulary section of one of the units, names of different jobs in medicine, as the following lesson includes an interview with a heart surgeon, in which only two medical jobs are mentioned.

Secondly, another practice that provides evidence of the emphasis given by textbook designers to the presentation of new vocabulary items in semantic sets is that semantically related words within a unit are often presented together to the students in a decontextulised fashion before their appearance through the context of the reading passage. This is obviously to draw the students' attention to the differences between semantically related words. For example, in the fifth year of the primary stage, the students are given two pictures representing the words *quarrelling* and *fighting*, as both words occur in the following lesson within the context of a story. Similarly, in the same year, the students are given pictures accompanying the words *ploughing*, *planting*, *harvesting*, *hot*, *cold*, *warm*, *raining*, and *windy*, as in the following lesson

they are presented with a passage tilted "Helping on the Farm" in which the aforementioned farming and weather words are used. In the same textbook, the students are given pictures presenting the words *boiling*, *heating*, *freezing*, and *cooling*, as these words are presented in a passage in the following lesson. Similarly, in the second year of the preparatory phase, the students are given at the beginning of a lesson the pictures of several sea animals, and asked to read a dialogue including a description of these animals and then return to the pictures, and write the animals' names under their pictures. In the first year of the secondary stage, the students are also given words representing attributes of animals accompanied by a picture, as some of these words appear in the following lesson. In the third year of the secondary stage, the students are given the parts of a tree in the vocabulary section at the beginning of the lesson, as the following reading passage includes these words.

Thirdly, the course designers' preference of presenting new lexical items in semantic sets is explicitly stated in the Teacher's Guides of the fourth and fifth years of the primary stage (Dallas and Brown, 1994, 1995) where the teachers are advised to "teach words in related groups".

The analyses presented above reveal the trend within the "Hello" series used in Egypt to present new vocabulary items in semantic sets to the students. In the following section, I will present the findings of the interviews I conducted with EFL Egyptian teachers to gain insights about the teachers' perceptions of presenting new vocabulary items in semantic sets.

7.5 Teacher Interviews

Teacher interviews were conducted to support the following three objectives:

- To gain a general overview of the teachers' perceptions and opinions with regard to alternative methods of vocabulary sequencing.
- To explore their experiences with regard to teaching new words in semantic sets.
- To gain specific insights into the range of difficulty or ease by which students learn and remember new words presented to them in semantic sets.

The interviews were conducted in November 2001 using a structured interview schedule (Appendix 7.9) and a tape recorder. The schedule included three main sections: The aim of section one was to collect some background information about the interviewees with regard to their qualifications, teaching experience and training. Section two was concerned with the interviewees' overall perspectives on alternative methods of vocabulary sequencing. Finally, the third set of questions sought opinions with regard to the ease or difficulty by which the students learn new words in semantic sets.

7.5.1 Piloting

The interview was piloted to estimate the time required for the interview, and to ensure clarity of the interview schedule. I interviewed four secondary school teachers in March 2001. No difficulties in comprehending the questions emerged in the piloting, thus no changes were administered to the interview schedule.

7.5.2 Procedures

Interviews were conducted individually inside schools during school hours in the head masters' offices. The interview schedule was written in English. However, all interviews were conducted in Arabic, though, then translated and transcribed back into English. The 30 teachers interviewed were teachers in both public and private schools in Assuit and Cairo representing the three phases of education. They had different teaching experiences ranging from less than a year to 21 years. I explained to the teachers my research aims and objectives clearly before I started the interviews. Although the headmaster of each school approved my research, I gave the teachers the choice of not participating. I asked them to be voluntarily interviewed and respected their choice if they refused to take part; I did have a number of refusals.

7.5.3 Data Analysis

Content analysis procedures were used to analyse the outcomes of the qualitative data. The preparation for the qualitative analysis was as follows: First I translated, transcribed and typed each interview as a whole in one document. I re-arranged the contents of each interview into subject-headings and sub-headings. I then reviewed the responses to each question and coded the answers under the headings and subheadings. This was done to enable me to identify the common themes raised

throughout the interviews. Finally, I identified the key issues from the data and grouped them into main themes which are highlighted in the following subsections.

7.5.3.1 Preference of Semantic Presentation

The preference for presenting new words in semantic sets on behalf of the vast majority of teachers was revealed throughout the interviews. 24 teachers (80%), when given the choice between teaching the word *trousers* within a semantic or a thematic grouping chose the semantic grouping, as indicated by the following teacher quotes:

> "With other items of clothes… to make the students aware of the names of different types of clothes and to differentiate between men and women clothes." (T1)

> "With other items of clothes… because together they form a group, that is clothes." (T9)

> "With other clothes… because they are closer to the word *trousers*." (T4)

> "It is preferable of course to present it with other words such as *skirt*, *blouse*, *sweater*… this can allow us to give the students a list of items presented under one heading which is clothes." (T17)

> "Of course with similar clothes' items… because the students can understand its meaning easily when it is connected with other similar items." (T19)

> "Of course other items of clothes…as this will help me to create a link or a relationship among the words, which in turn is very helpful for the students' reception of these words." (T20)

> "I prefer the first group of clothes, because the students will respond better when these words are taught together. As we know similar words together and the odd one out. Generally, students learn similar words better." (T27)

The remaining six teachers (20%) agreed that both semantically and thematically related words are needed while teaching the word "trousers". For example:

> "Both: firstly, it should be introduced to the students with other items of clothes. Then it should be used in a sentence in which words like *try on* and *changing room* are used." (T2)

> "Both groups of words are needed in the lesson, as it will probably deal with a topic such as shopping in a department store." (T29)

As additional evidence of the teachers' preference for sequencing new vocabulary items according to meaning similarity is that when they were given the word *plate* (as a new word for the students), and asked to give other new words that they prefer to accompany this word in the same lesson, a total of 16 teachers (53%) gave only semantically related words to this word, as evidenced by the following comments:

> "*glass*, *pan*, *dish*, *fork*, *knife*, *spoon*, and other words that are related to it." (T11)

> "The word *dish* as once in an exam the students were given a sentence to complete by using either *dish* or *plate*. So it is better to teach these words together so that the students can differentiate between the meanings of the two words." (T25)

12 teachers (40%) gave both semantically and thematically related words to the word *plate*, as illustrated in the following quotes.

> "Other objects such as *table*, *knife*, *spoon*, *fork*, or names of fruits or vegetables, or simple names of food." (T21)

> "Other kitchen tools, but if the lesson is about food, there should be also words related to food. This depends mainly on the topic." (T22)

Only one teacher suggested that the word *plate* should be accompanied with only thematically related words:

> "*Food* will be enough. For example, the food is in the plate." (T14)

One teacher gave both semantically and orthographically related words to the word *plate*:

> "*dish, plane, planet, platform.*" (T6)

When the teachers were asked if they found that teaching new words that are closely similar in their meanings (e.g. synonyms, opposites, or words belonging to the same family group) caused the students to confuse the meaning of these words afterwards, a

total of 13 interviewees (43%) replied that students do not confuse the meaning of similar words after learning them together. Rather, they were of the view that this actually helps them in remembering the meanings of the words:

> "No, this helps them to learn how to group words." (T1)
>
> "No, this helps me to present the words to the students in an organised manner." (T2)
>
> "No, this doesn't hinder learning. Students concentrate better when the words they are taught are similar in their meanings. Actually they have difficulties in learning new words that are not related to each other at all." (T 9)
>
> "On the contrary, this helps them in learning the new words much easier and realising that a concept might be expressed by different words." (T10)
>
> "No, this helps the students to differentiate the meanings of similar words, and thus remembering the meanings when they need them." (T30)

The previous quotes exemplify some of the issues raised throughout the literature in support of the semantic approach to vocabulary sequencing in that presenting words in semantic sets results in positive gains in the students' accuracy as a result of detecting the similarities and differences between the words (2.2.1). Additionally, sequencing new vocabulary items according to meaning similarity allows teachers to present the lexical items in an organised manner (see 2.2.7). Only two teachers (7%) reported that teaching new semantically related words to the students did indeed result in confusion afterwards:

> "Yes, sometimes this confuses them." (T11)
>
> "Yes, especially when they learn opposites as they keep cross associating their meanings afterwards." (T13)

15 teachers (50%) identified several factors determining the ease or difficulty by which students learn new semantically related words which I group in the following subsections under the following themes (1) level of the students, (2) number of words, (3) time allotted for word presentation, (4) using visual aids, (5) word presentation and practise, and (6) background knowledge.

7.5.3.1.1 Level of the Students

One factor emerging in the interviews was the relationship between the students' level of English proficiency on one hand and their acquisition of new vocabulary items presented in semantic sets on the other hand. Two interviewees (14%) expressed the idea that the difficulty or ease by which the students learn new semantic sets depends on their proficiency level. They were of the view that teaching new words in semantic sets does result in confusion for less proficient students but not for higher proficiency ones:

> "Confusion between words' meanings doesn't happen with secondary school students, but it does happen with primary and preparatory school students." (T3)

> " This depends on the students' standard. Teaching new similar words might cause confusion to students with average or low standards." (T29)

This view seems to concur with the view of some writers (Behydt, 1987; Hedge, 2000) who recommend that teachers should present new words in semantic sets to advanced students, as they are more likely to have reached a point where they can make connections and distinctions between semantically related words (see 2.3.4).

7.5.3.1.2 Number of Words

The second factor to emerge from the interviews is the number of new vocabulary items presented within the semantic set. Two teachers (14%) reported that the difficulty or ease by which students learn new semantically related words depends on the number of words similar in their meanings presented to the students:

> "It depends on the number of words, if the students are required to learn too many words sharing meaning similarity, probably this will hinder the learning of these words, but I think if the number of words are reasonable, this will not cause a problem for the students." (T12)

> "Giving the students words similar in their meanings help them to know better the meanings of these words, however, we should not give them many similar words in order not to increase the learning burden."(T30)

7.5.3.1.3 Time Allotted for Word Presentation

One teacher referred to a third factor affecting the learners' acquisition of semantically related words, i.e. the time allotted for explaining the differences between the new words within a semantic set:

> "Yes, they get confused, but I usually overcome this by spending extra time on explaining the meanings of similar words, and trying to explain the differences between them, for example, it took me a long time teaching the words *hire* and *rent* to ensure that the students won't confuse them later." (T14)

7.5.3.1.4 Using Visual Aids

The fourth factor emerging from the interview data was the use of visual aids while presenting new semantically related words to the students. Using visual aids was mentioned by three teachers (21%) as a means of avoiding the difficulty than can be caused by presenting new words sharing semantic ties:

> "If I'm using real objects, or even plastic ones, this will help the students to remember the right meaning of each word afterwards." (T22)

> "Confusion may occur, especially if all the words are new to the students, this is why we should use visual aids... if we use pictures we can avoid the confusion that might happen." (T24)

> "Students in the primary and preparatory stages don't confuse similar words, as their textbooks include pictures illustrating the meanings of new words, there is no need even for the teacher to say the meanings. Confusing the meaning of similar words happens in the secondary stage, as sometimes the students are required to learn a group of abstract words that are similar to each other, and that can't be illustrated by visual aids." (T25)

The final quote exemplifies an important point, i.e. the possibility that presenting new concrete words in semantic sets might not cause as much difficulty as presenting new semantically related abstract words to the students.

7.5.3.1.5 Word Presentation and Practise

The fifth factor determining the ease by which students acquire new words presented within a semantic set was identified by five teachers (36%) as being the method of presenting and practising the new words within a semantic set:

> "If the words are explained clearly to the students, and are given in sentences that clarify their meanings, there will be no problems afterwards in remembering the meanings of these words."(T4)

> "It doesn't make a difference, if these words occur in a lesson, they have to be presented together. Besides, it all depends on the method by which the words are presented to the students." (T5).

> "It all depends on the method of presentation, If I teach the meaning of the words sufficiently, the students will not confuse them afterwards." (T23)
>
> "Of course this causes confusion, but we can overcome it by practice." (T15)
>
> "As long as these words are presented together in the lesson. I should teach them together. Using the words in different situations, and giving the students several exercises to practice the words will overcome any difficulty that the students might experience with learning similar words." (T28)

These comments provide some evidence in support of the assertion by Gairns and Redman (1986) that similar items are easily confused and, thus, they need to be handled carefully in terms of contextualising the words properly and highlighting the differences between items as clearly as possible (see 2.3.4).

7.5.3.1.6 Background Knowledge

The final factor affecting the learnability of new words sharing semantic features was highlighted by two teachers (14%), who argued that presenting semantic sets to the students facilitates learning if the students already know some of the words belonging to these sets:

> "I think that teaching a number of new words similar in their meanings at the same time may increase the learning burden, so I think it's better if similar words appear in subsequent lessons, as we don't want them to be so separated from each other within the textbook in order not to loose the classification privilege which is very useful for the students." (T21)
>
> "Presenting groups of related words to the students helps them to learn the meanings of these words more effectively especially if the students already know some of these words, may be it is a bit difficult for them when all the words are new for them." (T26)

This view goes along with Waring's (1997) suggestion that there might be differences in vocabulary learning between beginner learners who have to set up new semantic sets in the L2 and intermediate learners who already know some words from a semantic set and when presented with a new word may only need to add this word to the existing set, rather than create a new one (see 3.4.3).

7.6 Summary

The primary aim of this chapter has been to analyse the ELT textbooks used in Egypt with regard to the approach by which new vocabulary items are sequenced in the three

educational phases: primary, preparatory, and secondary. The analysis has revealed that presenting new vocabulary items in unrelated groupings is the most common method of vocabulary sequencing throughout the three phases (7.4.3-7.4.5). Further, the analysis has revealed that presenting new vocabulary items to the students in semantic sets is a common practice throughout the textbooks in the three phases, as in many other EFL textbooks (see 2.5).

The second aim of this chapter has been to gain some insight into the teachers' opinions and perceptions with regard to teaching new vocabulary items in alternative set types. The analysis of the interview data has revealed that that majority of the teachers were in favour of teaching new vocabulary items in semantic sets. However, there were a number of comments implying that the ease by which new words within a semantic set can be learned is conditioned by certain factors, namely, level of the students, number of words, time allotted for word presentation, using visual aids, word presentation and practise, and background knowledge (7.5.3.1.1-7.5.3.1.6). In the following chapter, I discuss the main findings of the present research. I then present the research strengths, limitations, and implications for future research.

Chapter Eight

Discussion, Limitations, Implications and Conclusions

8.1 Overview

In this chapter, I draw together the main findings of this research, followed by an interpretation of these findings. I also discuss the pedagogical implications of the research. I then outline the strengths and weakness of the empirical study, and I note areas of useful future research, followed by my conclusion.

8.2 Summary of the Research Outcomes

As reported in Chapters 5 and 6, an empirical study comprising two experiments were conducted to investigate:

- The effects of presenting new lexical items in semantic, thematic, and unrelated sets (separate or mixed) on short-and long-term retention of these items.
- The relationship between the participants' gender, level of proficiency, and vocabulary size on one hand, and their short-and long-term retention of different types of sets on the other hand.
- The effects of the order by which different types of sets are presented to the participants on short-and long-term retention of the lexical items within these sets.
- The participants' perceptions towards learning new lexical items within the different set types.
- The effects of contextualising and practising new lexical items within a semantic set on reducing the interference effects.

With regard to the effects of presenting new lexical items in semantic, thematic, and unrelated sets, differences were revealed between the two experiments in terms of the participants' performance in the post-tests (see 5.5.1 and 6.6.1). Whereas the mean score for both the thematic and unrelated sets in the post-tests in Experiment 1 was significantly higher than the semantic sets, there were no significant differences among the scores of the three groups learning the three different set types in Experiment 2. However, the results of the follow-up tests in both experiments revealed that long-term retention was better when words were learned in thematic

sets. The only difference between the results of the two experiments in terms of long-term retention is that, while in Experiment 1, retention of words presented in thematic sets was significantly better than words presented in unrelated sets, in Experiment 2, there was no significant difference in the mean scores between the thematic and unrelated sets.

There are three main findings observed in Experiment 1. Firstly, when participants with a higher proficiency level - as evidenced by their scores on the FCE - and a larger vocabulary size - as evidenced by their scores on the VST - were required to learn L2 lexical items in semantic sets, their learning was not hindered initially. This was reflected by their scores in the post-tests which revealed that there were no significant differences in the mean scores among the three set types, in contrast to participants with lower proficiency levels and more limited vocabulary size whose mean scores for both thematic and unrelated sets were significantly higher than for the semantic sets. However, in terms of long-term retention, participants with a higher language proficiency and a broader vocabulary size remembered the meanings of thematically related items significantly better than they did for the items within the semantic and unrelated sets (see 5.5.2 and 5.5.3).

Secondly, there were no gender differences observed with regard to learning new lexical items in semantic, thematic and unrelated sets (see 5.5.4). Further, it was revealed that there was no significant effect for the order by which the sets were presented to the students (see 5.5.5).

Thirdly, with regard to the students' verbal reports, the main finding was that the majority of the participants identified the semantic sets as the easiest to learn, and the unrelated sets as the most difficult to learn (see 5.5.6).

On the other hand, the key findings of Experiment 2 were that presenting semantically related words in illustrative sentences, or practising them afterwards seemed to overcome the interference effects to some extent. The participants who learned semantic sets in context or practised them afterwards by solving puzzles did perform significantly better than participants learning decontextualised semantic sets in the follow-up tests. However, it is worth mentioning at this point that participants

required to learn thematic sets still performed significantly better than participants learning contextualised semantic sets or semantic sets followed by a task.

8.3 Interpretation of the Main Findings

In the following subsections I present my interpretations of the main findings of this research.

8.3.1 Semantic vs. Thematic vs. Unrelated

The dual-experiment method employed in the empirical study helped to establish which findings might be more robust and, hence, generalisable. Taken together, the results of the two experiments suggest that new lexical items are best retained when they are presented to the learners with other words with which they share thematic links. This holds for thematically related words learned together with semantically and unrelated words in a mixed way (Experiment 1) or if given as a separate and longer set (Experiment 2).

This finding is especially significant considering the fact that, while the two experiments constituting the study were conduced with different participants, and were different in their construction, their results were remarkably similar. As reported in Chapters 5 and 6, participants in Experiment 1 were presented with the three set types (mixed), whereas different treatment groups in Experiment 2 were given different types of sets. Further, participants in Experiment 1 were given four words only within each set, while each word set in Experiment 2 consisted of nine vocabulary items.

Another interesting point that arises from the analysis of the data is that in terms of long-term retention, there was no significant difference in the mean scores between the semantic and unrelated sets in both experiments. This result might lead us to question the notion argued by the opponents of the semantic approach to vocabulary sequencing (e.g. Tinkham, 1993) that learning new L2 lexical items in unrelated sets is better than learning new L2 lexical item in semantic sets.

The question remains why did learning new L2 vocabulary items in thematic sets appear to facilitate L2 vocabulary learning and retention? I posit here that there might

be two explanations for this. Firstly, if we return to the notion of episodic memory mentioned in Chapter 3 (see 3.2), one might argue that presenting new L2 items sharing thematic items helps in organizing these words in the episodic memory of the learners and that, thus, this might help the learners in terms of information retrieval. Secondly, it is possible that presenting new L2 items to the learners in thematic sets prompts them to use certain learning strategies that in turn, helps them in memorizing the target items. Evidence for this interpretation is illustrated by the findings of the students' verbal reports (see 5.5.6), where a number of students who thought that the thematic sets were the easiest to learn indicated that the reason behind this was that they used the words within the thematic sets in sentences or situations, which in turn helped them to remember the meanings of the words.

As this study was conducted with intermediate EFL students, a question of interest here is the generalisability of these findings to other students of different L2 proficiency. It was illustrated in Chapter 2 that there is a disagreement in the literature concerning the method by which the mental lexicon of L2 learners is organized (see 2.4.1). However, the majority of researchers seem to agree that learners in their initial stages of learning a language encode words in memory on the basis of acoustic and orthographic similarities, while more advanced learners encode vocabulary in memory on the basis of similar meanings (Henning, 1973; Harley, 1995). Further, the results of a study conducted by Kassabgy (1996) to investigate whether Egyptian EFL learners encode vocabulary in memory according to meaning or form similarities indicated that adult Egyptian learners at both elementary and advanced levels of proficiency encode lexical items in clusters of meaning associations. The findings of the present study suggest that presenting words in semantic sets result in difficulties for intermediate EFL students, i.e. those who had been learning English for eight and nine years. Therefore, it would appear that if learning words in semantic sets caused difficulties for intermediate students who, according to the view above, relied on meaning similarities in registering the L2 items in memory, this might imply that learners at lower-proficiency level are more likely to encounter similar or even greater difficulties in the learning and retention of semantically related items.

8.3.2 Minimizing Interference

The analyses reported in Chapters 5 and 6 illustrated the interference effects caused by presenting new L2 semantically related items to the participants. However, a point raised by my data is the possibility of minimizing the interference effects (see 6.6.2 and 6.6.3). This analysis showed that this could be achieved either by presenting each word within a semantic set in context or by providing the learners with an opportunity to practice the lexical items within the semantic set. The implications of these findings for second language classroom teaching are discussed in the following section.

8.4 Pedagogical Implications

Interference studies (e.g. Tinkham, 1993, 1997; Waring, 1997) yielding similar findings to my study in terms of the negative effects of teaching new lexical items in semantic sets have led some researchers (e.g. Schmitt, 2000; Nation, 2000a) to identify two pedagogical implications. Firstly, textbook writers presenting students with clusters of semantically similar new words need to reconsider such practice. Secondly, teachers using textbooks in which vocabulary items are sequenced according to meaning similarity should separate semantically related items by presenting them in different occasions over several lessons starting with the most useful item (according to frequency). However, I believe that these implications cannot be easily translated to EFL contexts for the reasons set out below.

As illustrated in Chapters 2 and 7, it is a common trend among textbook writers to present new vocabulary items in semantic sets (see 2.5 and 7.3.6). They do not seem to realize that by doing this they might be actually hindering rather than helping vocabulary learning. This might be simply due to their ignorance of the interference phenomenon as a result of the limited research in this field, or the extent to which they access research studies. It is worth mentioning at this point that most of the studies reported in Chapter 3 are not widely available. In fact, I only gained access to these studies (all except Higa, 1963, Tinkham, 1993, 1997, and Waring, 1997) by personally contacting the individual researchers interested in issues of interference and by asking them about relevant references which were sent to me through e-mail communications. The studies conducted by Higa (1963), Tinkham (1993,1997) and Waring (1997) are the only ones quoted by the opponents of the semantic approach to

vocabulary sequencing. Obviously, it takes more than four studies to draw course writers' attention to the fact that presenting new L2 lexical items in semantic sets might hinder rather than enhance the learning of these items. Moreover, there is a possibility that the findings of these studies are known by some textbook writers but ignored as they were not conducted in situations that are representative of real classroom situations (see 3.4.5). It seems plausible to posit that textbook writers are more likely to be interested in the findings of research if they know the research has been realistic in terms of what is normally done in classrooms and the materials which are used. Therefore, it is - perhaps - unrealistic to expect course writers to reconsider the practice of presenting new lexical items in semantic sets until the negative effects of interference become strongly established in literature.

Another reason for the difficulty of expecting textbook writers to alter their practice of presenting new lexical items in semantic sets is the fact that the method by which new vocabulary items are sequenced within a textbook depends to a large extent on the unit of progression used in a course, which in turn, depends on the writers' approach to second language development (see 4.3). Thus if textbook writers are using functions, notions, situations, grammatical features, or semantic field membership as the unit of progression (see 4.2.1-4.2.4), which is likely to lead to the occurrence of semantic sets within a course, it is difficult to ask them to avoid presenting semantically related items together.

The second implication drawn by some L2 researchers (e.g. Nation 2000a) from the findings of L2 interference studies is that teachers using textbooks which present new words in semantic sets should separate semantically related items by presenting them over several lessons starting with the most frequent item of a set. Sugiyama (1996:146) asserts that "the teacher's task is to reduce the difficulties that might interfere with learning by effectively controlling vocabulary to be learned." However, in many EFL situations, one of which is Egypt, it is difficult for teachers to control the vocabulary they are teaching. It is quite an impossible task for teachers to choose some words to teach from one lesson and neglect the others, and add them to other lessons. In many EFL situations, it is a requirement that teachers follow the sequence of the textbook and the teachers' guide. Moreover, textbooks usually include exercises requiring the learners to practice the new vocabulary within a

lesson, thus it will be difficult to ignore some words in addition to the exercises related to these words within a lesson. An important point to mention here is that the criterion suggested for separation of the lexical items within semantic sets is "frequency", i.e. the most frequent word within a semantic set should be introduced before less frequent words. However, I am quite certain that many teachers in many EFL situations do not know what "frequency" means, and if they know, they do not have access to materials to help them to decide the frequency of different words.

Further, if it could be assumed that teachers can separate new semantically related words within a textbook by presenting them over several lessons, this will still not prevent the students from learning them together as long as they are grouped together in the textbook, as EFL learners are often curious to know the meaning of new words.

A further reason which makes me reluctant to suggest the separation of semantically related items within a course and the presentation of them over different lessons with different words is that this is likely to result in presenting the learners with unrelated sets of words. The findings of my study indicated that the long-retention of words presented in semantic sets did not differ significantly than words presented in unrelated sets (see 5.5.1 and 6.6.1). Therefore, it is likely that separating the members of a semantic set and presenting each with unrelated words might still not help the learners in retaining the meanings of these words.

For all the above reasons, I am against the implications drawn from similar studies (e.g. Tinkham, 1993, 1997; Waring, 1997) with regard to advising course writers and teachers to separate semantically related words within a course, as these implications seem unrealistic in terms of application. Instead, I think that teachers need to be aware that teaching new semantically related words at the same time *might* cause a problem for *some* learners. Teachers should therefore, be guided to the methods (see 8.4.1 below) by which they could reduce the confusion caused by learning semantically related items together. Based on the findings from the present study and a review of the relevant literature, the following are advocated as approaches by which interference can be minimized for L2 vocabulary learners.

8.4.1 Learners' Awareness

If the learners are not aware of the confusion that might arise from learning words that are similar in their meanings together, there is a need to press this point more directly during language teaching. The teachers need to draw the learners' attention to the dangers of learning related words together. As Nation (2000a) notes, if learners understand this, then they can use this knowledge to guide their own learning. If learners are aware and conscious that learning words sharing meaning similarity might cause them confusion afterwards, they might either spend more effort learning these words or use specific facilitative vocabulary learning strategies that help them to remember the meanings of these words.

8.4.2 Rich Instruction

As illustrated in Chapter 3 (see 3.2), the explanation behind interference is that if two or more items share strongly related common features and they are learned together, the similar features make them become strongly associated with each other, and the differences interfere with each other. If interference is to be avoided, then the differences between related items need to be made greater. Central to this is the notion of "noticing" and the role of attention. According to Shmidt (1990, 1993), noticing is a necessary condition for the conversion of input to intake. Viewed from this perspective, it seems that drawing the learners' attention to the similarities and differences among semantically related words is vital to minimizing the interference effects. Helping the learners to notice the differences between items sharing meaning similarity will decrease the strength of association between these items, thus reducing the chances of interference. Further, instructional conditions should be arranged to provide opportunities for the students to manipulate and learn the words within a semantic set in varied and rich ways, for example, by describing how they relate to their own familiar experiences (cf. Beck *et al.*, 1987). The importance of explicit instruction to raise learners' awareness of the differences between semantically related words is asserted by some of the advocates of the semantic approach to vocabulary sequencing (see 2.3.4), and by some of the teachers throughout the interviews (see 7.5.3.5.1).

8.4.3 Thematization

My own experiments along with Tinkham's (1997) study have indicated that new L2 words are better learned and retained if they share thematic ties. Therefore, teachers might be advised to try to thematize the lexical items presented within a semantic set by mixing the words into a thematic rather than a semantic arrangement. This might be achieved by embedding each of the items in normal use so that the learners' focus is on the message, not on decontextualised items. For example, in one of the units of *Hello 1* (see Appendix 7.1), the students are given the words *farmer*, *mechanic*, *nurse* under the heading "jobs", and the words *farm*, *hospital*, *workshop* under the heading "work places", therefore the teacher might thematize these words by presenting each job in a short sentence with the place in which it takes place instead of presenting it with other jobs as suggested in the textbook and the teachers' guide.

8.4.4 Contextualisation

In general, the importance of presenting new words in context has been illustrated throughout the literature (see 3.4.5). According to the findings of Experiment 2 with regard to comparing the performance of participants presented with decontextualised semantic sets and participants who were given semantic sets in which the lexical items were accompanied by example sentences (see 6.6.3), I believe that in the case of presenting new semantically related L2 words to the students, the need to provide interesting context examples that help to clarify the differences in meanings is of great importance. While marking the participants' tests, I noticed that some of them gave a definition of the word using the example given to them in the learning sheet, which seems to imply the assumption suggested by several writers (e.g. Harmer, 1991; Cook, 1996; Jullian, 2000) that presenting the target item in context might have helped the participants in visualizing mental pictures to go with the target items, and thus helped them in remembering their meanings. For example, the meaning of the word *consent*, i.e. permission, which was followed by the example *you can't join the trip without your parents' consent*, was defined by one of the participants as "a permission to do something like traveling". Similarly, the word *defrayment*, i.e. money provided to pay a cost, which was followed by the example *you can't take the car before paying the whole defrayment*, was defined by one of the participants as "money to pay for the cost of something you are buying, for example, a car". Another example appeared for the word *mugging*, i.e. stealing from someone in a public place,

which was followed by the example *there are police officers everywhere in the park after yesterday's reported mugging*, and was defined by one of the participants as "stealing from people in public places (park)". Similarly, the word *blossom*, i.e. a flower on a tree, which was followed by the example, *the scent of apple blossoms filled the air*, was defined by one of the participants as "a flower in the tree like an apple rose".

Nation (2000a) asserts that the items within a semantic set should be presented in quite different contexts. For example, if *hot* and *cold* occur together in a course, *hot* can be used with collocates, such as *summer*; whereas *cold* can be used with collocates such as *winter*. The two words should not be used interchangeably in the same construction, such as *It's hot*, or *It's cold.*

8.4.5 Practise Opportunities

One of the findings of Experiment 2 indicated that practising the words presented within a semantic set did minimise the interference effects (see 6.6.2). This finding is consistent with the predictions made from the depth-of-processing theory (Craik and Lockhart, 1972), i.e. the more deeply information is processed, the better it is retained. Thus, this might imply that teachers could promote and reinforce deep processing of the words by providing the students with opportunities to practice new semantically related words, especially by giving them problem-solving activities that are thematically based which require the learner to think about and use the word meanings. As Thornbury (2002: 25) puts it "the more decisions the learner makes about a word, and the more cognitively demanding these decisions, the better the word is remembered". The puzzles used in Experiment 2 (see Appendices 5.7 (1) to 5.7 (6)) might be a good example of the kind of activities that could be created by teachers to draw the learners' attention to the differences between semantically similar words as they are used in different contexts.

8.4.6 Helping Learners with Vocabulary Learning

The role of vocabulary learning strategies used by L2 learners while encountering new words in acquiring these words has been emphasised in literature (e.g. Ahmed, 1989). Further, the advantages of teaching learners to use certain strategies have also been acknowledged (e.g. Brown and Perry, 1991). Therefore, one might argue that

teachers can help their students in learning semantically related words by teaching them certain strategies and techniques that would enable them to differentiate their meanings and to remember them afterwards. Take for example, the key word strategy, which I believe might be a very helpful technique to help students distinguish between similar items. This strategy has been positively evaluated in literature (Bower and Winzenz, 1970, as cited in Ellis, 1995; Gu and Johnson, 1996). The key word method involves designing an image that connects the pronunciation of the second language word with the meaning of a first language word. For instance, if an Egyptian learner required to learn the words *fat* and *thin* together, the teacher might help him by associating the word *fat* with /fata/, which is a traditional Egyptian meal constituting of bread and rice, and imagining a man who likes to eat /fata /so he becomes *fat*.

8.4.7 Recycling

Research shows that spaced review of learned material can dramatically reduce the rate of forgetting (Thornbury, 2000). Thus, when teaching students a new set of semantically related words, the items within the set should be reviewed by teachers in subsequent lessons until they ensure that the students can differentiate the meanings of the lexical items.

In the previous subsections, I identified several implications that might be employed by EFL teachers to minimise the interference effects. In the following section, I am going to identify the strengths and limitations of the present research.

8.5 Research Strengths and Limitations

As with any other research, this research has its strengths and limitations, and the following subsections outline the main strengths and limitations of this research.

8.5.1 Strengths

In this study, I conducted an empirical study that avoided the limitations of previous similar studies (see 3.4) in terms of the number of participants and target items, using natural L2 words as opposed to artificial words, using participants with previous experience with the language of the target items, in addition to being actual learners of the target language, and investigating short-and long-term retention of the target

items. I administered two experiments which provided some statistical evidence on the method by which new L2 vocabulary items are best sequenced to the learners, the interference effects of presenting new lexical items in semantic sets, and the methods by which the interference effects can be minimized. Another strong element of this research has been gaining qualitative data via the students' verbal reports with regard to their perceptions of learning different types of word sets. Moreover, to be able to relate the findings to the Egyptian context, I analyzed the lexical content of the ELT textbooks used in the three phases of education in Egypt with regard to the employed methods for vocabulary sequencing. I also conducted interviews with Egyptian teachers of English to gain insights into their perceptions about teaching new vocabulary items in semantic sets. A further strength of this study is that it has investigated issues that have not been explored before in similar studies. These original dimensions are summarized as follows:

1. The differences in vocabulary gains between new words learned in semantic sets and new words learned in thematic sets.
2. The relationship between the participants' levels of English language proficiency and their acquisition of different types of word sets (i.e. semantic, thematic, and unrelated).
3. The relationship between the participants' vocabulary size and their acquisition of different types of word sets (i.e. semantic, thematic, and unrelated).
4. The relationship between the participants' gender and their acquisition of different type of word sets (i.e. semantic, thematic, and unrelated).
5. The effects of contextualising new L2 vocabulary items presented in semantic sets on overcoming interference effects.
6. The effects of practicing new L2 vocabulary items presented in semantic sets on overcoming interference effects.

8.5.2 Limitations

There are, however, limitations of my research, and I identify five key ones here. The first limitation concerns the definition of "long-term retention". Some would argue that one week, i.e. the interval between the learning and the follow-up tests, does not constitute sufficient time to determine long-term retention of the target words. I do not know how well the vocabulary was retained in the long run, for example, one or

two months after the study had ended. It was my intention to conduct subsequent follow-up tests, but I could not travel back to Egypt -on account of the conditions of my grant- for a further research phase after conducting the main experiments.

A second limitation lies in the fact that the sample of the present study was limited to Egyptian university-level EFL learners who have been studying English for eight and nine years. This limits the scope for generalization of the research findings. The research could have been improved if the research sample included participants with different lengths of exposure to English as a foreign language.

The third limitation concerns the testing of the vocabulary gains. Only fill-in tests were used in which the participants were given the target words and had to give their meanings. This limitation arises from the idea that even if a person does not have enough knowledge to recall the meaning of an item, he may have enough to pick the meaning out of a list (Petersen, 1997). Thus, if matching tests were used in which the participants were given the target items and their meanings and asked to match them, they might have given different results than the fill-in tests used in my experiments. Matching tests were originally included in the research design, but they had to be abandoned because of time constraints.

A fourth limitation is the possibility that the words comprising the different word sets (i.e. semantic, thematic, and unrelated) were not equal in terms of their ease of learnability. Balancing the words against each other for learnability effects was a difficult task in this research, especially while formulating long parallel sets of unfamiliar semantically and thematically related words. As illustrated in Chapter 5 (see 5.4.2.1), I tried to balance the words against each other for learnability effects by using words of the same part of speech, i.e. nouns, in addition to balancing for word length. However, there are factors other than these two criteria that might affect the ease of learnability. In addition to these two factors Laufer (1997) has pointed out others, namely: (i) pronounceability, (ii) orthography, (iii) morphology, (iv) semantic features of the words, and (v) synformy.

With regard to prounceability, it is argued that familiarity with phonological features affects accuracy in perceiving and remembering the word (Rodgers, 1969; Gibson and

Levin, 1975). I believe that this factor did not affect the learnability of the target items in the two experiments as the participants have been studying English for eight or nine years and, thus, one can assume their familiarity with different phonological features of English. Orthography was of no importance to this research as the post- and follow-up tests did not require the correct spelling of the words on the part of the participants. Laufer (1997) identifies morphology as comprising both inflexional and derivational complexity. The former does not hold true for any of the target items used in the study, and the latter would hardly affect the target items' learnability, taking the participants' level into consideration.

Semantic features of the words include abstractness, specificity and register restriction, idiomaticity, and multiple meaning (Laufer, 1997). With regard to abstractness, it is sometimes claimed that abstract words are more difficult to learn than concrete words (e.g. Allen and Vallette, 1972). However this notion is challenged by other writers (e.g. Laufer, 1997) assuming that this might be true only in the case of L1 acquisition, as L2 learners who have already developed abstract concepts in their L1 would not find L2 abstract concepts more difficult to learn than concrete ones. As for specificity and register restriction, it is argued (cf. Halliday *et al.*, 1964; Blum and Levenston, 1978) that general and neutral words, which can be used in a variety of contexts and registers are less problematic for production than words restricted to a specific register. The experiments of this study did not investigate the participants' production of the target items (see 5.4.3.3), thus the factor of specificity and register can be ignored. As for idiomaticity, no idiomatic expressions were used in the two experiments, and the multiple meaning element is not of concern to this type of study, as the participants were given each item accompanied by one meaning and were required to learn and remember this specific meaning.

With regard to synformy, i.e. similarity of lexical forms, there has been evidence that L2 learners confuse words that sound and/or look alike (Henning, 1973; Laufer, 1985, 1991). Thus, while preparing the target items to be used in the study, I tried not to include lexical items sharing phonological or orthographic similarity in the same learning session. However, the effect of this factor was stronger than I expected, as while marking the tests, I found that some of the participants confused the meaning of

words similar in their sound or form which had appeared in different learning sessions (see 8.6.8 below).

Overall, I believe that the possibility that some target items might be easier to learn than others did not affect the results of the experiments for two reasons. Firstly, the results from some of the studies investigating the effects of different factors on vocabulary learnability are contradictory. For example, while Rodgers (1969) and Gibson and Levin (1975) found that difficult-to-pronounce words were harder to learn than easier-to-pronounce ones, Stock (1976) found that the difficulty of pronunciation played no role in the learning of Hebrew words by native English speakers. In this regard, length was also inconclusive, as although the findings of some studies (e.g. Philips, 1981; Coles, 1982) indicated that the length of a word affects its learnability, for Rodgers (1969), length played no role. Secondly, it is argued (Field, SLVA:2002) that factors affecting learnability of L2 words are only more marked at lower levels of proficiency. At higher levels of proficiency, these factors became much less important. Phillips (1983), in a study of learnability of French vocabulary for English school children found that all of the difficulty causing factors that he measured became non-significant as the learners became more proficient. As my study was conducted with university-level students who had been studying English for eight or nine years, one might assume that these different criteria proposed to affect the ease by which vocabulary items are learned might have very little effect on the learnability of the target words in this research.

The final limitation I raise here has to do with the definition of "context" in this study. Contextualisation of the target items in my two experiments was established by using each lexical item in one example sentence. However, the appropriate length of context to be used in vocabulary acquisition has been problematised in the literature. For example, Schouten-van Parren (1985, 1989) cited in Engelbart and Theuerkauk (1999), asserts that the objections to presenting isolated words would equally apply to the presentation of words in isolated sentences. On this basis she strongly recommends presenting new vocabulary in meaningful texts. On the other hand, some researchers (e.g. Modria and Wit-DeBoer, 1991; Engelbart and Theuerkauk, 1999) note that one sentence might well offer more contextual stimuli than a longer passage, and that isolated sentences can play a major part in the learning of the words.

This is mainly due to the notion that when new words appear in a text, some of these words may go unnoticed, particularly if they are not essential for the understanding of the main points. Evidence in support of this notion is also given by Laufer and Shmueli (1997) who found in their empirical study addressing the issue of quantity of context used in presentation, that for long-term retention, sentence and list presentation was more effective than text presentation. Moreover, the decision taken in this research to present new lexical items in single sentences accords with the practice adopted by numerous other researcher (e.g. Gipe, 1979; Behydt, 1987; Nagy and Scott, 1990; Brown and Perry, 1991; Modria and Wit De Boer, 1991). Having presented some of the main limitations of my research, in the following section, I will identify several areas for future research.

8.6 Suggestions for Future Research

On the basis of the findings presented in Chapter 6 and summarised in 8.2 above, it becomes evident that further investigation is needed into several relevant areas, as will be identified in the following sub-sections.

8.6.1 L1 background

The participants of this study were all Egyptians, which ensured a tighter control. In terms of the generalisation of the findings of this research to other EFL situations, one would reasonably expect that if a similar study were to be conducted in a situation very similar to the EFL situation in Egypt (e.g. in another Arab country), its findings would be quite similar. However, in situations where the participants' L1 is not Arabic, this may be less the case. Therefore, as an extension of this study, it would be useful to examine participants of other L1 backgrounds and to compare the results with the present ones. Further, it would be interesting to see if the findings of this study apply to native speakers of English.

8.6.2 Proficiency Level

This research was conducted with university students with an intermediate level of proficiency. I have attempted earlier (8.3.1) to generalise the findings to learners with different levels of proficiency on the basis of what is known in literature on how L2 learners of different levels of language proficiency encode L2 vocabulary items. However, as illustrated in 2.4.1, there is a lack of consensus on the issue of the

organisation of the L2 mental lexicon as a consequence of a dearth of empirical research. Similar studies need to be conducted with L2 learners with varied levels of language proficiency to be able to compare the relationship between the learners' level of language proficiency on one hand and their acquisition of different set types (i.e. semantic, thematic and unrelated) on the other hand.

8.6.3 Organisation of L2 Mental Lexicon

An unresolved issue, as mentioned above, remains the organisation of the L2 learners' mental lexicon. Thus, there is a need for studies (word association tests or error analysis) investigating the organisation of L2 mental lexicon of participants with different L1 background, and participants with similar L1 background and different levels of L2 proficiency. The findings of these studies along with the findings of studies interested in different methods of vocabulary sequencing might provide greater insight into the ways by which new vocabulary items are best sequenced to L2 learners.

8.6.4 Vocabulary Learning Strategies

Further studies should investigate the relationship between L2 learners' exposure to different types of word groupings and their choice of vocabulary learning strategies. In other words, there is a need for studies exploring the possibility that L2 students required to learn different word set types might use different vocabulary learning strategies with each set type. For example, the findings of the verbal reports conducted with the participants in the present study (5.5.6) suggested that presenting the participants with thematically related items enabled them to use these items in certain situations or sentences that helped them to remember the meanings of the words afterwards. Concurrent verbal protocols generated at the same time as the participants are working on the learning tasks can provide insights into the various leaning strategies used by learners while involved in learning different set types. Moreover, in regard to the interference effects of teaching new semantically related items, it would be interesting to explore if there are certain strategies that help learners to avoid the interference effects.

8.6.5 Testing and Elicitation Techniques

In the present study, only fill-in tests were used to gain information about the learners' short-and long-term retention of the meanings of the target items (see 5.4.3.3). The use of other methods of testing and elicitation techniques to collect data would be essential for future studies. For example, other experiments could investigate if interference effects also occur if the participants are tested by being given the meanings of the target words and asked to produce the target words.

8.6.6 Vocabulary Tasks

Following the involvement load hypothesis (see 6.4.2), postulating that the higher involvement in a word induced by a task, the better the retention, research should be conducted to compare tasks with different involvement loads with regard to their effect on vocabulary learning. Further, the three involvement factors: search, need, evaluation may not be equally important for vocabulary learning, thus research should investigate which one of these factors is most beneficial while practising new vocabulary items.

8.6.7 Semantic Relatedness

It is clear that some words are semantically closer than others. For example, the words *apple*, *orange*, *banana*, and *grapes* seem to be more semantically related than *apple*, *eggs*, *hamburger*, and *sugar*. The degree of semantic relatedness, therefore, might determine how helpful or unhelpful it will be to learn semantically related items together. To put it another way, are some semantically related sets easier to learn than others? Research is needed to clearly define the term "semantic relatedness" and how to measure it, and to determine if the degree of semantic features shared between lexical items does affect their learnability. Further, the two experiments in this study investigated the short-and long-term retention of target items that were semantically related in terms of being co-ordinates. Another fruitful area of inquiry would be to investigate the effects of other semantic relations, for example, antonyms and meronyms. Moreover, it will be interesting to explore if more or less interference occurs when the participants are exposed to a semantic set of new L2 lexical items that share semantic similarity to items that they already know, compared to when they are given a semantic set that has no semantic ties with their previous L2 knowledge. In other words, will the interference effects be the same for participants who learn

furniture words for the first time, as for participants adding new furniture words to other furniture words that they already know?

8.6.8 Orthographic/ Phonological Similarity

It would be wise for future research to consider whether lexical items that look or sound somewhat alike, so-called "synforms" (Laufer-Dvorkin, 1991), may cause interference. While marking the tests in this research, I noticed that some participants confused the meanings of words that were similar in their form or sound though not introduced in the same learning session. For example, *bequest* and *banquet*, *manacles* and *mandibles*, *stroller* and *betrothal*, *vagrant* and *vigour*, *billow* and *billfold*, *wherewithal* and *betrothal*, and *frigate* and *foliage*. It would also be interesting to investigate whether the effect of interference is stronger with similar spellings, similar sounds, or similar meanings.

8.6.9 Part of Speech

The target vocabulary items in this study were nouns, thus an interesting possibility for future research is to examine whether using verbs, adjectives, adverbs, or propositions as the target items will lead to similar or different findings.

8.6.10 Word Abstractness

Further research is also needed to investigate whether the learnability of new L2 lexical items in semantic sets might differ according to the abstractness and concreteness of the words as suggested in the teachers' interviews (see 7.5.3.1.4).

8.6.11 Interference and Speech Errors

A point raised by Waring (SLVA: 2002) that might be of interest for further studies is the relationship between interference effects when learning new semantically related words, and slips of the tongue when the wrong (but known) words are selected, e.g. *I went with my father, oops my mother*.

8.7 Conclusion

In summary, the results of this research confirm the earlier studies regarding the role of interference while teaching new L2 lexical items sharing semantic ties. Moreover,

the two experiments offer strong evidence for the facilitative role of the thematic approach to vocabulary sequencing. The implications for teaching are that L2 learners are likely to confuse semantically related words at different levels of proficiency. However, an examination of current published textbooks shows that interference is a factor that is not appreciated by most course designers. It is still not recognised that the associational links that encourage designers to bring related items together in a lesson are the same links that increase the possibility of interference. This is mainly due to the lack of research in this area. Therefore, what is needed is more research in the areas I have identified, in order to gather more conclusive evidence with regard to the interference effects, and the most appropriate methods by which vocabulary items should be sequenced to L2 learners.

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Appendices

Appendix: 5.1 (1): Pilot Word List: Experiment 1/ Session 1

Group 1

redingote: coat

reefer: jacket

trews: trousers

Group 2

barque: boat

pharos: lighthouse

matelot: sailor

Group 3

betrothal: engagement

blossom: a flower on a tree

scribe: writer

Write the meaning of the following words:

1. **blossom** ----------

2. **reefer** ----------

3. **matelot** ----------

4. **barque** ----------

5. **scribe** ----------

6. **pharos** ----------

7. **trews** ----------

8. **redingote** ----------

9. **betrothal** ----------

Appendix 5.1 (2): Pilot Word List: Experiment 1/ Session 2

Group 1

oosmid: dish

bovahp: bowl

loshae: plate

Group 2

bemouf: library

ayket: whisper

grivah: quiet

Group 3

meykoo: island

ejosk: potato

fihawp: beard

Write the meaning of the following words:

1. **fihawp** ----------

2. **ejosk** ----------

3. **loshae** ----------

4. **bovahp** ----------

5. **grivah** ----------

6. **ayket** ----------

7. **meykoo** ----------

8. **bemouf** ----------

9. **oosmid** ----------

Appendix 5.2 (1): Feedback from Native Speakers [Stage 1]

I am a MPhil/ PhD student in the GSOE. My research aims at investigating the effectiveness of different methods of presenting English vocabulary to Egyptian university students. I would be very grateful if you could help me in my preparation of two types of word lists:

1. The first is a list of words that have very similar meanings (semantically related words). For, example, **sweater, skirt, trousers, blouse, shirt, jumper.**
2. The second is a list of words that are more indirectly related (thematically related words). For example, **sweater, changing room, wool, trying on.**

Below I list some words that I may use in my study. Could you write down as many words that you think of, that are: (1) semantically related in terms of being closely related in terms of meaning (see 1 Above), (2) thematically related in terms of being more indirectly related as they are more likely to occur together in certain situations (see 2 Above). The words can be difficult or unusual, as I need to develop lists of words that my students will not know. For each list below I have given an example to get you started.

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Manducation: eating Voracity: eating great quantities of food Devouring: eating quickly	***Manducation: eating*** Aliment: food Palatability: pleasant taste

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Belligerent: soldier	***Belligerent: soldier***
Sentry: a soldier controlling access to a place	Valour: courage in the face of danger
Infantry: foot soldiers	Accoutrement: soldier's outfit

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Pelf: money	***Pelf: money***
Indemnity: money paid as compensation	Billfold: wallet
Pittance: very small amount of money	Opulence: wealth

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Larceny: stealing	***Larceny: stealing***
Pilfering: stealing things of little value	Slammer: prison
Rustling: stealing cattle	Crookedness: dishonesty

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Apparel: clothes	***Apparel: clothes***
Layette: clothes for a new-born child	Foppishness: excessive concern with clothes
Drindl: skirt	Seamstress: a woman who sews as a job

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Barque: boat	***Barque: boat***
Trawler: fishing boat	Pharos: lighthouse
Dinghy: racing boat	Briny: sea

Appendix 5.2 (2): Feedback from Native Speakers [Stage 2]

Below are the lists of words that I may use in my study. Could you please give your opinion on the semantic and thematic sets constructed below. The semantic sets should include words that are closely related in terms of meaning. While the thematic sets should include words that are indirectly related as they are more likely to occur together in certain situations.

Please indicate the words that you think are not representatives of the categories they belong to.

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Manducation: eating **Voracity:** eating great quantities of food **Devouring:** eating quickly **Nibbling:** eating in small amounts **Guzzling:** eating greedily **Omophagy:** eating raw food **Munching:** eating steadily **Grazing:** eating snacks **Chomping:** eating noisily	***Manducation:*** eating **Victuals:** food **Obesity:** the state of being overweight **banquet:** formal meal for many people **Garnish:** decoration of food **Savour:** taste **Mandibles:** jaws **Crockery:** plates and cups used at meal times **Recipe:** a set of instructions for preparing a dish

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Pongo: soldier **Infantry:** foot soldiers **Cavalry:** soldiers who fought on horseback **Sapper:** a soldier carrying engineering work **Sentinel:** a soldier whose job is to stand and keep watch **Sentry:** a soldier stationed to control access to a place **Mercenary:** a soldier paid to serve in a foreign country. **Besiegers:** soldiers surrounding a place in order to capture it. **Patrol:** soldiers moving around an area to protect it.	***Pongo:*** soldier **Skirmish:** minor battle **Accoutrement:** soldier's outfit **Sniping:** shooting at someone from a hiding place at long range **Rations:** food supplied on a regular basis to soldiers during a war **Munitions:** military weapons **Gallantry:** courage in a battle **Conscription:** enlisting compulsory in the armed forces **Garrison:** the buildings which the soldiers live in

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
pelf: money **Indemnity:** money paid as compensation **Remittance:** money sent in payment by post **Bequest:** money left to someone in a will **Wherewithal:** money needed for a particular purpose **Boodle:** money that is gained dishonestly **Defrayment:** money provided to pay a cost **Emolument:** money received for work **Stipend:** money paid regulary to a person	***pelf:*** money **Billfold:** wallet **Opulence:** wealth **Insolvency:** bankruptcy **Exorbitance:** expensiveness **Miser:** a rich person who hates spending money **Avarice:** greed for money **Mint:** a place in which money is officially made by the government **Profligacy:** extravagance

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Larceny: stealing **Pilfering:** stealing things of little value **Rustling:** stealing cattle **Brigandage**: stealing of people in forests and mountains **Looting:** stealing goods **Plundering:** stealing commited by soldiers during times of war **Embezzlement:** stealing money placed in one's trust **Mugging:** stealing someone in a public place **Pillaging:** stealing with violence	***Larceny:*** stealing **Slammer:** prison **Crookedness:** dishonesty **Infringement**: violation of the law **Booty:** valuable stolen goods **Committal:** sending to a prison **Restitution:** restoration of something stolen **Filcher:** thief **Manacles:** pair of chains for fastening hands or feet

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Apparel: clothes **Layette:** clothes for a new-born child **Livery:** clothes worn by a servant **Mufti:** civilian clothes worn by military or police staff **Regimentals:** clothes worn by military officers **Redingote:** woman's long coat **Slacks:** casual trousers **Pinafore:** apron **Trousseau:** clothes collected by a bride for her marriage	***Apparel:*** clothes **Foppishness:** excessive concern with clothes **Seamstress:** a woman who sews as a job **Haberdashery:** a shop selling men's clothes **Coutre:** design and manufacture of clothes **Vogue:** the fashion at a certain time **Detergent:** a chemical product used for cleaning clothes **Loom:** a machine used for weaving thread into cloth **Drapery:** cloth

Semantically related words: words that are very closely related in meaning	**Thematically related words: words that are indirectly related in meaning**
Barque: boat **Trawler:** fishing boat **Dinghy:** racing boat **Pirogue:** a boat made from a single tree trunk **Ferry:** a boat for conveying passengers and goods **Wherry:** rowing boat **Tug:** a small powerful boat that pulls ships **Sloop:** armed boat **Skiff:** a boat for one person	***Barque:*** boat **Pharos:** lighthouse **Brine:** sea water **Matelot:** sailor **Berth:** bed on boat **Helm:** a wheel for steering the boat **Mooring:** a place where the boat is tied so it cannot drift away **Salvaging:** rescuing a boat from loss at sea **Flotsam:** wreckage of a boat found floating on the sea

Appendix 5.3: The Vocabulary Levels Test

Name: _____

Year: _____

Date: _____

This is a vocabulary test. You must choose the right word to go with each meaning.
Write the number of that word next to its meaning.

An example has been done for you

1 business
2 clock
3 horse --6-- part of a house
4 pencil --3-- animal with four legs
5 shoe --4-- something used for writing
6 wall

Try to do every part of the test.

There is no time limit. You can take as long as you need.

Part 1

1	1 copy	
	2 event	---- end or highest point
	3 motor	---- this moves a car
	4 pity	---- thing made to be like another
	5 profit	
	6 tip	
2	1 accident	
	2 debt	---- loud deep sound
	3 fortune	---- something you must pay
	4 pride	---- having a high opinion of yourself
	5 roar	
	6 thread	
3	1 birth	
	2 dust	---- game
	3 operation	---- winning
	4 row	---- being born
	5 sport	
	6 victory	
4	1 clerk	
	2 frame	---- a drink
	3 noise	---- office worker
	4 respect	---- unwanted sound
	5 theatre	
	6 wine	
5	1 dozen	
	2 empire	---- chance
	3 gift	---- twelve
	4 opportunity	---- money paid to the government
	5 relief	
	6 tax	
6	1 admire	
	2 complain	---- make wider or longer
	3 fix	---- bring in for the first time
	4 hire	---- have a high opinion of someone
	5 introduce	
	6 stretch	
7	1 arrange	
	2 develop	---- grow
	3 lean	---- put in order
	4 owe	---- like more than something else
	5 prefer	
	6 seize	
8	1 blame	
	2 elect	---- make
	3 jump	---- choose by voting
	4 manufacture	---- become like water
	5 melt	
	6 threaten	

9	1 brave	
	2 electric	---- commonly done
	3 firm	---- wanting food
	4 hungry	---- having no fear
	5 local	
	6 usual	
10	1 bitter	
	2 independent	---- beautiful
	3 lovely	---- small
	4 merry	---- liked by many people
	5 popular	
	6 slight	

Part 2

11	1 bull	
	2 champion	---- formal and serious manner
	3 dignity	---- winner of sporting event
	4 hell	---- building where valuable objects are shown
	5 museum	
	6 solution	
12	1 blanket	
	2 contest	---- holiday
	3 generation	---- good quality
	4 merit	---- wool covering used on beds
	5 plot	
	6 vacation	
13	1 apartment	
	2 candle	---- a place to live
	3 draft	---- chance of something happening
	4 horror	---- first rough form of something written
	5 prospect	
	6 timber	
14	1 administration	
	2 angel	---- group of animals
	3 frost	---- spirit who serves God
	4 herd	---- managing business and affairs
	5 fort	
	6 pond	
15	1 atmosphere	
	2 counsel	---- advice
	3 factor	---- a place covered with grass
	4 hen	---- female chicken
	5 lawn	
	6 muscle	

16
1 abandon
2 dwell ---- live in a place
3 oblige ---- follow in order to catch
4 pursue ---- leave something permanently
5 quote
6 resolve

17
1 assemble
2 attach ---- look closely
3 peer ---- stop doing something
4 quit ---- cry out loudly in fear
5 scream
6 toss

18
1 drift
2 endure ---- suffer patiently
3 grasp ---- join wool threads together
4 knit ---- hold firmly with your hands
5 register
6 tumble

19
1 brilliant
2 distinct ---- thin
3 magic ---- steady
4 naked ---- without clothes
5 slender
6 stable

20
1 aware
2 blank ---- usual
3 desperate ---- best or most important
4 normal ---- knowing what is happening
5 striking
6 supreme

Part 3

21
1 analysis
2 curb ---- eagerness
3 gravel ---- loan to buy a house
4 mortgage ---- small stones mixed with sand
5 scar
6 zeal

22
1 concrete
2 era ---- circular shape
3 fibre ---- top of a mountain
4 loop ---- a long period of time
5 plank
6 summit

23
1 circus
2 jungle ---- musical instrument
3 nomination ---- seat without a back or arms
4 sermon ---- speech given by a priest in a church
5 stool
6 trumpet

24

1 artillery
2 creed ---- a kind of tree
3 hydrogen ---- system of belief
4 maple ---- large gun on wheels
5 pork
6 streak

25

1 chart
2 forge ---- map
3 mansion ---- large beautiful house
4 outfit ---- place where metals are made and shaped
5 sample
6 volunteer

26

1 contemplate
2 extract ---- think about deeply
3 gamble ---- bring back to health
4 launch ---- make someone angry
5 provoke
6 revive

27

1 demonstrate
2 embarrass ---- have a rest
3 heave ---- break suddenly into small pieces
4 obscure ---- make someone feel shy or nervous
5 relax
6 shatter

28

1 correspond
2 embroider ---- exchange letters
3 lurk ---- hide and wait for someone
4 penetrate ---- feel angry about something
5 prescribe
6 resent

29

1 decent
2 frail ---- weak
3 harsh ---- concerning a city
4 incredible ---- difficult to believe
5 municipal
6 specific

30

1 adequate
2 internal ---- enough
3 mature ---- fully grown
4 profound ---- alone away from other things
5 solitary
6 tragic

Part 4

31

1 area
2 contract ---- written agreement
3 definition ---- way of doing something
4 evidence ---- reason for believing something is or is not true
5 method
6 role

32	1 construction	
	2 feature	---- safety
	3 impact	---- noticeable part of something
	4 institute	---- organisation which has a special purpose
	5 region	
	6 security	
33	1 debate	
	2 exposure	---- plan
	3 integration	---- choice
	4 option	---- joining something into a whole
	5 scheme	
	6 stability	
34	1 access	
	2 gender	---- male or female
	3 implementation	---- study of the mind
	4 licence	---- entrance or way in
	5 orientation	
	6 psychology	
35	1 accumulation	
	2 edition	---- collecting things over time
	3 guarantee	---- promise to repair a broken product
	4 media	---- feeling a strong reason or need to do something
	5 motivation	
	6 phenomenon	
36	1 adult	
	2 exploitation	---- end
	3 infrastructure	---- machine used to move people or goods
	4 schedule	---- list of things to do at certain times
	5 termination	
	6 vehicle	
37	1 alter	
	2 coincide	---- change
	3 deny	---- say something is not true
	4 devote	---- describe clearly and exactly
	5 release	
	6 specify	
38	1 convert	
	2 design	---- keep out
	3 exclude	---- stay alive
	4 facilitate	---- change from one thing into another
	5 indicate	
	6 survive	
39	1 bond	
	2 channel	---- make smaller
	3 estimate	---- guess the number or size of something
	4 identify	---- recognising and naming a person or thing
	5 mediate	
	6 minimize	

40	1 explicit	
	2 final	---- last
	3 negative	---- stiff
	4 professional	---- meaning "no" or "not"
	5 rigid	
	6 sole	
41	1 analogous	
	2 objective	---- happening after
	3 potential	---- most important
	4 predominant	---- not influenced by personal opinions
	5 reluctant	
	6 subsequent	
42	1 abstract	
	2 adjacent	---- next to
	3 controversial	---- added to
	4 global	---- concerning the whole world
	5 neutral	
	6 supplementary	

Part 5

43	1 alabaster	
	2 chandelier	---- small barrel
	3 dogma	---- soft white stone
	4 keg	---- tool for shaping wood
	5 rasp	
	6 tentacle	
44	1 apparition	
	2 botany	---- ghost
	3 expulsion	---- study of plants
	4 insolence	---- small pool of water
	5 leash	
	6 puddle	
45	1 arsenal	
	2 barracks	---- happiness
	3 deacon	---- difficult situation
	4 felicity	---- minister in a church
	5 predicament	
	6 spore	
46	1 alcove	
	2 impetus	---- priest
	3 maggot	---- release from prison early
	4 parole	---- medicine to put on wounds
	5 salve	
	6 vicar	
47	1 alkali	
	2 banter	---- light joking talk
	3 coop	---- a rank of British nobility
	4 mosaic	---- picture made of small pieces of glass or stone
	5 stealth	
	6 viscount	

48

1 dissipate
2 flaunt ---- steal
3 impede ---- scatter or vanish
4 loot ----twist the body about uncomfortably
5 squirm
6 vie

49

1 contaminate
2 cringe ---- write carelessly
3 immerse ---- move back because of fear
4 peek ---- put something under water
5 relay
6 scrawl

50

1 blurt
2 dabble ---- walk in a proud way
3 dent ---- kill by squeezing someone's throat
4 pacify ---- say suddenly without thinking
5 strangle
6 swagger

51

1 illicit
2 lewd ---- immense
3 mammoth ---- against the law
4 slick ---- waiting revenge
5 temporal
6 vindictive

52

1 indolent
2 nocturnal ---- lazy
3 obsolete ---- no longer used
4 torrid ---- clever and tricky
5 translucent
6 wily

Appendix 5.4: The "Use of English" Section in the FCE

Name: _____

Year: _____

Date: _____

Time: 1 hour 15 minutes

Instructions:

- There are 65 questions in this test.
- Answer all questions.
- Write the answers on the spaces provided.

Part 1

For questions **1-15**, read the text below and decide which answer **A, B, C** or **D** best fits each space. There is an example at the beginning **(0).**

0	A learn	B capture	C discover	D get
1	A simple	B primary	C pure	D regular
2	A mix	B construct	C assemble	D make
3	A sad	B poor	C short	D weak
4	A sense	B do	C feel	D be
5	A state	B mention	C remark	D tell
6	A submit	B give	C serve	D deal
7	A save	B provide	C deliver	D return
8	A extensive	B extreme	C intensive	D intentional
9	A pass	B escape	C miss	D avoid
10	A spot	B part	C side	D slice
11	A worry	B upset	C ache	D depress
12	A hardly	B tightly	C uncomfortably	D heavily
13	A activity	B body	C industry	D company
14	A computes	B estimates	C assesses	D counts
15	A employed	B filled	C completed	D covered

LEARNING TO MAKE A PERFECT PIZZA

According to the European Pizza-Makers' Association, making a good pizza is not a straightforward skill to **(0)...A**. The ingredients seem very **(1)** ----: flour, yeast, water and a bit of salt. But water and flour can easily **(2)** ---- glue and anyone who has eaten a **(3)** ---- quality pizza will know how bad it can make your stomach **(4)** ----.

"In Italy, 70 percent of pizza makers could improve on their product, not to **(5)** ---- all the pizza makers around the world who **(6)** ---- uneatable meals," says Antonio Primiceri, the Association's founder. He has now started a pizza school in an attempt to **(7)** ---- the reputation of this traditional dish. As part of an **(8)** ---- course, the students at Mr Primiceri's school are taught to **(9)** ---- common mistakes, produce a good basic mixture, add a tasty topping and cook pizza properly. "Test the finished pizza by breaking the crust," advises Mr Primiceri. "If the soft **(10)** ----inside the pizza is white, clean and dry, it's a good pizza. If it is not like this the pizza will **(11)** ---- your stomach. You will feel **(12)** ---- full and also thirsty."

In Italy alone, the pizza **(13)**---- has an annual turnover of more than $12 billion. Mr Primiceri **(14)** ---- that there are 10,000 jobs in pizza restaurants waiting to be **(15)** ---- by those with real skill. "If you are a good pizza cook, you will never be without a job," he says.

Part 2

For questions **16-30,** read the text below and think of the word which best fits each space. Use only **one** word in each space. There is an example at the beginning **(0).**

HOLLYWOOD

How was **(0)** ***.....it.....*** that Hollywood came to be the place everyone associates with the American film industry? It's a strange story.

There was a little village in southern California called Cahuenga Valley **(16)** ---------- a Mr and Mrs Wilcox had their home. In 1887, **(17)** ----------Mrs Wilcox was on a trip to the east coast, she got into conversation **(18)** ---------- a stranger on a train. The stranger had a home called Hollywood somewhere else in the country, **(19)** ---------- Mrs Wilcox liked the name **(20)** ---------- much that she decided to give her home the same name. Because the Wilcox's home was the biggest in Cahuenga Valley, the village soon became known **(21)** ---------- Hollywood.

In normal circumstances most people **(22)** ---------- never have heard of Hollywood. However, between 1908 and 1913 **(23)** ---------- else happened. Many small independent film companies began moving to southern California **(24)** ---------- two main reasons. Firstly, they were attracted by the sunny climate, which let them film throughout the year **(25)** ---------- the need for expensive lighting. Secondly, they were **(26)** ---------- problems with the larger, more powerful studios in New York, and they wanted to get away from there.

Only one studio actually set **(27)** ---------- in Hollywood. Local people were so angry when it appeared that **(28)** ---------- law was passed forbidding the building of any more studios. In fact, Hollywood itself never had a film industry, surprisingly enough, **(29)** ---------- the other studios that came to the area were all built outside Hollywood. Nevertheless, by 1915 "Hollywood" **(30)** ---------- become familiar as a term for the movie business as a whole.

Part 3

For question **31-40**, complete the second sentence so that it has a similar meaning to the first sentence, using the word given. **Do not change the word given.** You must use between two and five words, including the word given. Here is an example **(0).**

Example:

0 You must do exactly what the manager tells you.

carry

You must ---------- instructions exactly.

The gap can be filled by the words **"carry out the manager's"**

Write the missing words in the space provided.

31 So that John could go on holiday in the summer he saved £10 a week.

order

John saved £10 a week ---------- able to go on holiday in the summer.

32 It's not worth asking the manager for the day off.

point

There ---------- in asking the manager for the day off.

33 We had to finish all the work before we could leave.

until

We had to stay ---------- all the work.

34 Tim had not expected the concert to be so good

better

The concert ----------had expected.

35 If Cheryl doesn't train harder, she'll never get into the swimming team

does

Cheryl will never get into the swimming team ---------- more training.

36 "Do you realise what the time is, Steve?" asked Chris.

what

Chris asked Steve ---------- it was.

37 The manager failed to persuade her to take the job.

succeed

The manager ---------- her to take the job.

38 At the end of his speech, the winner thanked his parents.

finished

The winner ---------- his parents.

39 I applied for the job a month ago.

month

It ---------- applied for the job.

40 They received many letters of support after they had appeared on television.

following

They received many letters of support ---------- on television.

Part 4

For Questions **41-55**, read the text below and look carefully at each line. Some of the lines are correct, and some have a word which should not be there.
If a line is correct, put a tick (/) at the end of the line. If a line has a word which should not be there, write the word at the end of the line. There are two examples at the beginning (**0** and **00**).

TAKING BETTER PHOTOGRAPHS

0 Like many people, I have had a camera for almost as long as I can (/)

00 remember, and I have always enjoyed me taking photographs of (me)

41 my family and friends, and places I have been visited. Then, about a year

42 ago, I noticed that most of the photos I was so proud of which were in

43 fact all very similar to each other. They all showed groups of people

44 standing by a famous building or some other attraction. You hardly

45 couldn't make out their faces clearly, and so it was difficult to get

46 an idea of how had everybody felt. I was looking for a new hobby at

47 the time, and have decided that I would start taking photography

48 more seriously. I thought it would be expensive, but, after reading

49 a few chapters of a book I borrowed from a friend, I last realised that

50 I could improve a great deal extra without spending a lot of money on new

51 equipment. Soon, instead of just taking out the same old pictures, I

52 was photographing those trees, animals, people I didn't know and so

53 on. This soon made a real difference to the quality of my photographs

54 as I began to concentrate myself on getting the best picture possible. I

55 am pleased with the results because I have achieved in such a short time.

Part 5

For Questions **56-65**, read the text below. Use the word given in capitals at the end of each line to form a word that fits in the space in the same line. There is an example at the beginning **(0).**

A NEW SUPERMARKET FOR THE TOWN

At a (0) ***meeting*** held in Oxwell last Thursday evening a wide	**MEET**
(56) ---------- of opinions was expressed on plans to build a large	**VARY**
supermarket in the town. A (57) ---------- of the supermarket group	**DIRECT**
stated that the supermarket would benefit the (58) ---------- of	**INHABIT**
Oxwell as it would give people more (59) ---------- when shopping	**CHOOSE**
and would lead to a (60) ---------- in the number of jobs available in	**GROW**
the town, which has a high rate of (61) ----------. Although there was	**EMPLOY**
(62) ---------- on the need for new jobs, some of those present	**AGREE**
claimed that the supermarket would lead to a (63) ---------- of jobs as	**LOSE**
small shops, (64) ---------- to compete with supermarket prices,	**ABLE**
would be forced to close. The final (65) ---------- on whether or	**DECIDE**
not to build the supermarket will be made next month.	

Appendix 5.5 (1): Experiment 1/ Session 1

Name: _____

Year: _____

Date: _____

Instructions

- You will be given 3 groups of words to learn (each group includes 4 words), accompanied by their English meanings and sentences to illustrate the meanings.

- You will be given **5** minutes to study the new words and their meanings. Then you will be tested on the words that you have just learned.

- There is an extra sheet (page 4) to be used if you need to write the words while studying them.

Group 1

1. **looting**: stealing goods

Example: During the riots, many people were accused of **looting** goods from the shops.

2. **pilfering**: stealing things of little value

Example: The pupil was accused of **pilfering** after the teacher saw him searching another child's bag.

3. **rustling:** stealing cattle

Example: The farmer brought his animals inside at night because there had been a recent outbreak of cattle **rustling**.

4. **embezzlement:** stealing money placed in one's trust

Example: The manager accused the clerk of **embezzlement** after he discovered the loss of a thousand pounds from the safe.

Group 2

1. **manducation**: eating

Example: **manducation** is the action of the lower jaw in chewing food, and preparing it in the mouth before it is received into the stomach.

2. **banquet**: formal meal for many people

Example: A famous cook was hired to prepare a **banquet** for the new governor.

3. **crockery**: plates and cups used at meal times

Example: The sink was full of piles of dirty **crockery.**

4. **recipe**: a set of instructions for cooking a dish

Example: The **recipe** says you need four eggs and 250g of chocolate.

Group 3

1. **betrothal**: engagement

Example: Their **betrothal** was announced in Al-Ahram newspaper.

2. **blossom**: a flower on a tree

Example: The scent of apple **blossoms** filled the air.

3. **fatigue**: tiredness

Example: Increasing number of people in high-powered jobs are suffering from **fatigue** and stress-related illness.

4. **disparity**: a great difference

Example: There is such **disparity** in the standards of living between rich and poor.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **recipe ----------**
2. **looting ----------**
3. **betrothal ----------**
4. **manducation ----------**
5. **pilfering ----------**
6. **banquet ----------**
7. **blossom ----------**
8. **crockery ----------**
9. **embezzlement ----------**
10. **fatigue ----------**
11. **rustling ----------**
12. **disparity ----------**

Appendix 5.5 (2): Experiment 1/ Session 2

Group 1

1. **bequest**: money left to someone in a will

Example: With the exception of a small **bequest** to relatives, he left all his property to charity.

2. **wherewithal**: money needed for a particular purpose

Example: Ideally I'd like to buy a bigger house but I lack the **wherewithal.**

3. **remittance**: money sent in payment by post

Example: Please send your **remittance** with the completed form.

4. **defrayment:** money provided to pay a cost

Example: You can't take the car before paying the whole **defrayment.**

Group 2

1. **apparel**: clothes

Example: He looked handsome in his wedding **apparel.**

2. **seamstress**: a woman whose job is sewing

Example: After her husband's death, she worked as a **seamstress** to look after her family.

3. **foppishness**: excessive concern with clothes and appearance

Example: I can't believe his **foppishness,** he stands in front of the mirror for hours.

4. **drapery**: cloth

Example: I don't have enough **drapery** to make a suit.

Group 3

1. **denizen**: inhabitant

Example: As far as we know, there are no **denizens** on the moon.

2. **tidings**: news

Example: He hated to be the carrier of the bad **tidings**.

3. **genocide**: deliberate murder of a whole community or race

Example: The acts of **genocide** and torture that were carried in Rwanda were unbelievable.

4. **pugilist**: boxer

Example: Mohamed Ali was a great **pugilist**.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **bequest** ----------
2. **apparel** ----------
3. **denizen** ----------
4. **wherewithal** ----------
5. **seamstress** ----------
6. **tidings** ----------
7. **remittance** ----------
8. **foppishness** ----------
9. **genocide** ----------
10. **defrayment** ----------
11. **drapery** ----------
12. **pugilist** ----------

Appendix 5.5 (3): Experiment 1/ Session 3

Group 1

1. **nibbling**: eating in small amounts

Example: Aren't you hungry? You are only **nibbling** your food.

2. **guzzling**: eating greedily

Example: He is so greedy , he is always **guzzling** at meal times.

3. **devouring**: eating quickly

Example: Why are you **devouring** your food? Do you have something urgent to do after lunch?

4. **chomping**: eating noisily

Example: Stop **chomping** your food, the noise you are making is extremely annoying.

Group 2

1. **larceny**: stealing

Example: According to the Muslim's law, **larceny** should be punished by cutting off the thief's hand.

2. **booty**: valuable stolen goods

Example: The thieves hid their **booty** in a cave.

3. **slammer**: prison

Example: He is doing five to ten years in the **slammer.**

4. **filcher**: thief

Example: A **filcher** has stolen his wallet.

Group 3

1. **vagrant**: a person without home

Example: There is much homelessness in this country, the government should build more shelters for **vagrants.**

2. **frigate**: a warship

Example: The **frigate** sank after its exposure to an air attack.

3. **magnitude**: size

Example: No one seems to realise the **magnitude** of this problem.

4. **stroller**: baby's pushchair

Example: At first he was embarrassed to be seen pushing a **stroller** down the street.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **nibbling** ----------
2. **larceny** ----------
3. **vagrant** ----------
4. **guzzling** ----------
5. **booty** ----------
6. **frigate** ----------
7. **devouring** ----------
8. **slammer** ----------
9. **magnitude** ----------
10. **chomping** ----------
11. **filcher** ----------
12. **stroller** ----------

Appendix 5.5 (4): Experiment 1/ Session 4

Group 1

1. **tug**: a small powerful boat that pulls ships

Example: The captain will call for a **tug** to pull our ship to the shore.

2. **trawler**: fishing boat

Example: The **trawler** is ready, let's go fishing.

3. **dinghy**: racing boat

Example: His **dinghy** won him last year's race.

4. **skiff**: A boat for one person

Example: You can't come with me, I'm sailing in a **skiff.**

Group 2

1. **pelf**: money

Example: He doesn't usually carry much **pelf** in his pockets.

2. **billfold**: wallet

Example: He got out a **billfold** stuffed with banknotes.

3. **miser**: a rich person who hates spending money

Example: He had a reputation for being a wealthy **miser** who would never pay for anything if he could possibly avoid it.

4. **mint**: a place in which money is officially made by the government

Example: British coins are produced in the Royal **Mint**.

Group 3

1. **foe**: enemy

Example: The two countries have united against their common **foe.**

2. **scribe**: journalist

Example: Ahmed Ragab is a great **scribe.**

3. **foliage**: plant leaves

Example: She put some dark green **foliage** in the vase with roses.

4. **sneakers**: sports shoes

Example: I can't find my **sneakers** to go running with you.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **tug** ----------
2. **pelf** ----------
3. **foe** ----------
4. **trawler** ----------
5. **billfold** ----------
6. **scribe** ----------
7. **miser** ----------
8. **foliage** ----------
9. **skiff** ----------
10. **mint** ----------
11. **sneakers** ----------
12. **dinghy** ----------

Appendix 5.5 (5): Experiment 1/ Session 5

Group 1

1. **sapper**: a soldier carrying out engineering work

Example: They requested a **sapper** to mend the bridge.

2. **sentry**: a soldier stationed to control access to a place

Example: People approaching the gates were challenged by the **sentry**.

3. **cavalry**: soldiers who fought on horseback

Example: A young **cavalry** officer fell from his horse during the battle.

4. **patrol**: soldiers moving around an area to make sure that there is no trouble there

Example: The **patrol** walked through the streets, watching for any sign of trouble.

Group 2

1. **vessel**: ship

Example: We crossed the river by **vessel.**

2. **matelot**: sailor

Example: A good **matelot** rarely becomes sick at sea in rough water.

3. **mooring**: a place where the ship is tied so it cannot drift away

Example: The ship can't remain here for too long, as the **mooring** fees are very high.

4. **pharos**: lighthouse

Example: Alexandria's **pharos** is one of the Seven Wonders of the World.

Group 3

1. **tumbler:** an acrobat

Example: In his youth, he was briefly employed as a circus **tumbler.**

2. **consent:** permission

Example: You can't join the trip without my **consent.**

3. **succour:** help given to people who are suffering

Example: She crossed the enemy lines, disguised as a civilian, to bring medical **succour** to the Resistance fighters.

4. **penitence:** remorse

Example: He shows no **penitence** for his crime.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **sapper** ----------
2. **vessel** ----------
3. **consent** ----------
4. **sentry** ----------
5. **matelot** ----------
6. **tumbler** ----------
7. **cavalry** ----------
8. **mooring** ----------
9. **penitence** ----------
10. **patrol** ----------
11. **pharos** ----------
12. **succour** ----------

Appendix 5.5 (6): Experiment 1/ Session 6

Group 1

1. **layette**: clothes for a new-born baby

Example: People usually buy a **layette** before the baby is born.

2. **trousseau**: clothes collected by a bride for her marriage

Example: She has bought her **trousseau** just before the wedding.

3. **livery**: clothes worn by a servant

Example: The servants of the king always wear the smartest **livery**.

4. **mufti**: civilian clothes when worn by military or police staff.

Example: They couldn't recognise the officers as they were in **mufti**.

Group 2

1. **pongo**: soldier

Example: It's an honour to be a **pongo** in the armed forces.

2. **skirmish:** minor battle

Example: Border **skirmishes** between India and Pakistan are common.

3. **sniping**: shooting at someone from a hiding place at long range

Example: Accurate **sniping** from well-concealed positions is a skill of a good soldier.

4. **rations**: food supplied on a regular basis to soldiers during a war

Example: The soldiers' daily **rations** were limited.

Group 3

1. **billow**: large sea wave

Example: I can hear the sound of the **billows** breaking on the shores.

2. **sapling**: young tree

Example: Newly planted **saplings** are swaying gently in the spring breeze.

3. **vigour**: physical strength

Example: His body lacks the bounce and **vigour** of a normal three-year-old child.

4. **censure**: disapproval

Example: It's a controversial policy which has attracted international **censure**.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **layette** ----------
2. **pongo** ----------
3. **censure** ----------
4. **trousseau** ----------
5. **rations** ----------
6. **sapling** ----------
7. **livery** ----------
8. **skirmish** ----------
9. **billow** ----------
10. **mufti** ----------
11. **sniping**----------
12. **vigour** ----------

Appendix 6.1 (1): Pilot Word List: Experiment 2/ Group 1

1. **larceny**: stealing
2. **looting**: stealing goods
3. **pilfering**: stealing things of little value
4. **embezzlement**: stealing money placed in one's trust
5. **plagiarism**: stealing someone's ideas
6. **mugging**: stealing from someone in a public place
7. **plundering**: stealing committed by soldiers during war.

Write the meaning of the following words:

1. plundering ----------

2. pilfering ----------

3. embezzlement ----------

4. looting ----------

5. larceny ----------

6. mugging ----------

7. plagiarism ----------

Appendix 6.1 (2): Pilot Word List: Experiment 2/ Group 2

1. **larceny**: stealing

2. **infringement**: violation of the law

3. **slammer**: prison

4. **crookedness**: dishonesty

5. **manacles**: pair of chains for fastening hands or feet

6. **restitution**: restoration of something stolen

7. **filcher**: thief

Write the meaning of the following words:

1. **restitution** ----------

2. **filcher** ----------

3. **crookedness** ----------

4. **larceny** ----------

5. **manacles** ----------

6. **infringement** ----------

7. **slammer** ----------

Appendix 6.1 (3): Pilot Word List: Experiment 2/ Group 3

1. **larceny**: stealing

2. **magnitude**: size

3. **demission**: resignation

4. **consent**: permission

5. **disparity**: a great difference

6. **frigate**: a warship

7. **interment**: the burial of a corpse in a grave

Write the meaning of the following words:

1. **interment** ----------

2. **disparity** ----------

3. **demission** ----------

4. **larceny** ----------

5. **magnitude** ----------

6. **frigate** ----------

7. **consent** ----------

Appendix 6.2 (1): Experiment 2/ Group 1/ Session 1

Name: _____

Year: _____

Date: _____

Instructions

You will be given 3 sheets:

- Sheet 1 includes a list of nine words accompanied by their English meanings. You will be given **3** minutes to study the new words and their meanings, as you are going to be tested on these words.

- Sheet 2 includes a puzzle that needs to be solved by using the new words you have just learned.

- Sheet 3 is to be used if you need to write the words while studying them.

1. **larceny**: stealing

2. **embezzlement**: stealing money placed in one's trust

3. **looting**: stealing goods

4. **pillaging**: stealing with violence

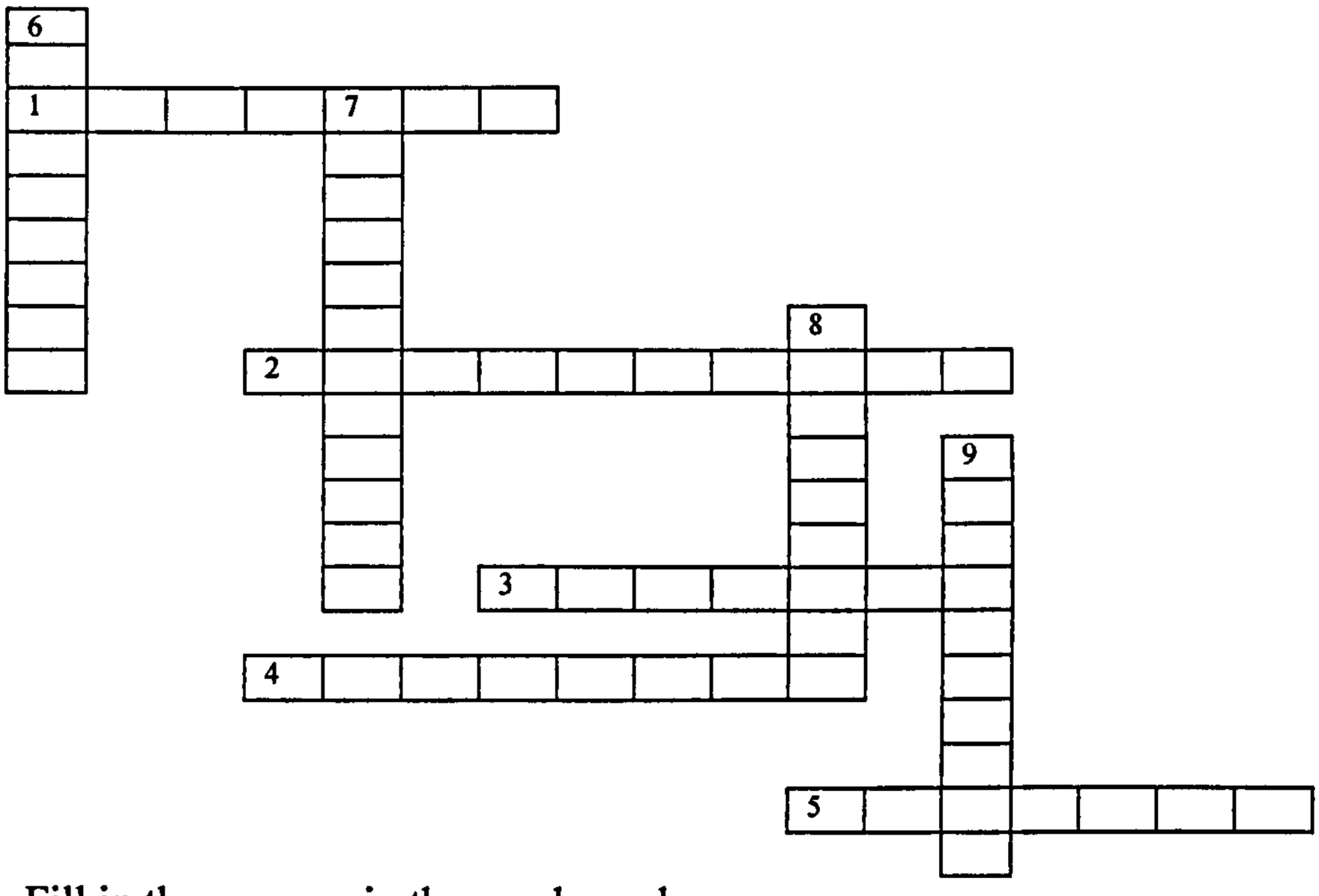
5. **plundering**: stealing committed by soldiers during a war

6. **brigandage**: stealing from people in forests and mountains

7. **pilfering**: stealing things of little value

8. **mugging**: stealing from someone in a public place

9. **rustling**: stealing cattle



Fill in the answers in the word puzzle.

Across

1. According to the Muslim's law, ----------should be punished by cutting off the thief's hand.
2. The army is moving from town to town, killing and ---------- as it goes.
3. During the riots, many people were accused of ---------- goods from the shops.
4. The farmer brought his animals inside at night because there had been a recent outbreak of cattle ----------.
5. There are police officers everywhere in the park after yesterday's reported ----------.

Down

6. A lot of ---------- went on during the riots and many people were injured.
7. The manager accused the clerk of ---------- after he discovered the loss of a thousand pounds from the safe.
8. The pupil was accused of ---------- after the teacher saw him searching another child's bag.
9. Camping in the forest is not safe right now, as there was a reported ---------- last week.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **plundering** ----------
2. **pilfering** ----------
3. **embezzlement** ----------
4. **looting** ----------
5. **larceny** ----------
6. **brigandage** ----------
7. **mugging** ----------
8. **pillaging** ----------
9. **rustling** ----------

Appendix 6.2 (2): Experiment 2/ Group 1/ Session 2

1. **manducation**: eating

2. **omophagy**: eating raw food

3. **grazing**: eating snacks

4. **munching**: eating steadily

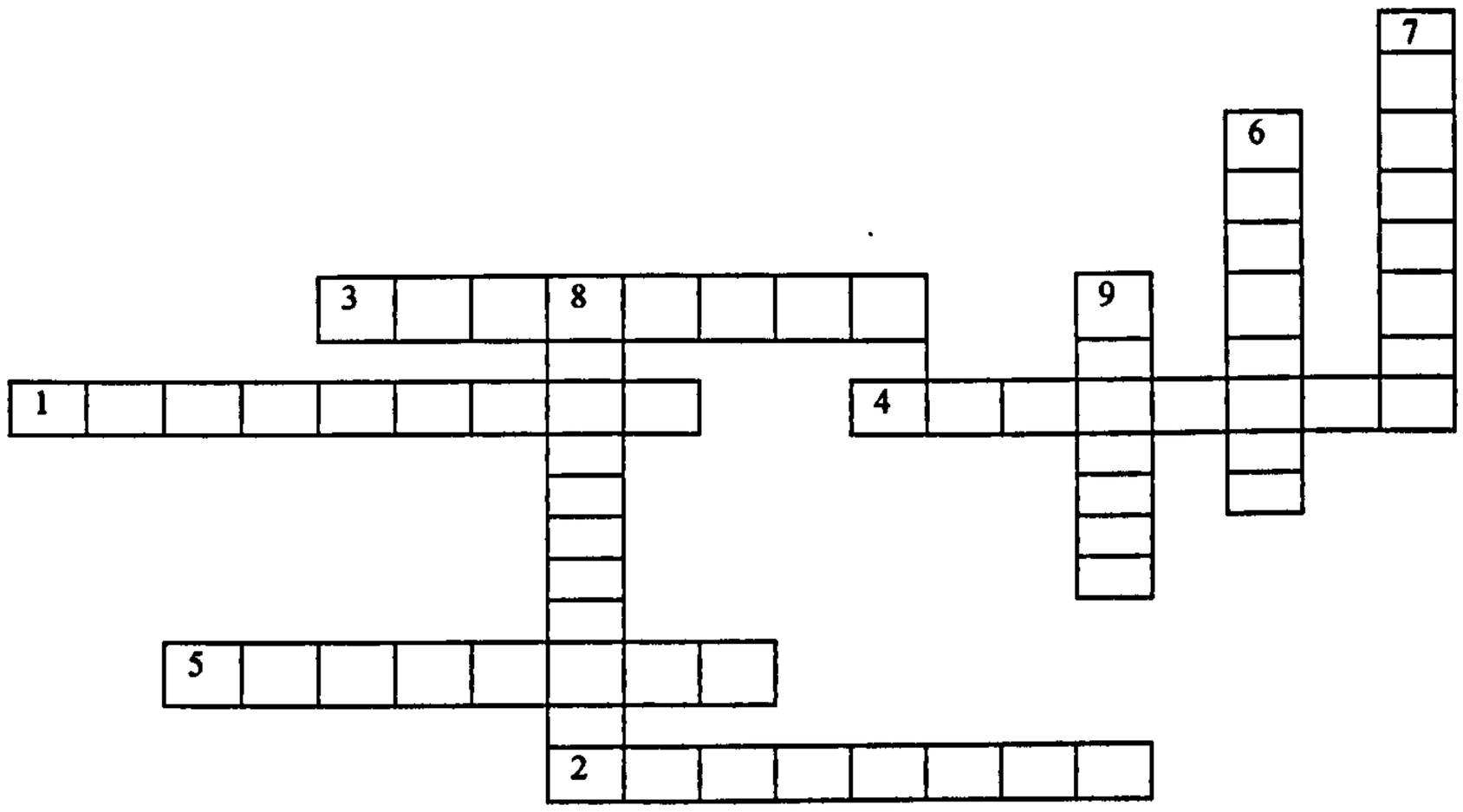
5. **voracity:** eating great quantities of food

6. **devouring**: eating quickly

7. **nibbling**: eating in small amounts

8. **guzzling**: eating greedily

9. **chomping**: eating noisily



Fill in the answers in the word puzzle.

Across

1. Why are you ---------- your food? Do you have something urgent to do after lunch?
2. Aren't you hungry? You are only ---------- your food.
3. Stop ---------- your food. The noise you are making is extremely annoying.
4. Did you eat the whole chicken? Your ---------- for food is abnormal.
5. He is so greedy; he is always ---------- at meal times.

Down

6. There was an old dog in the backyard ---------- his food with great care.
7. ---------- still exists in some remote African tribes.
8. ---------- is the action of the lower jaw in chewing food, and preparing it in mouth before it is received into the stomach.
9. Some families don't sit down to proper meals nowadays, they are just ----------.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **voracity** ----------
2. **grazing** ----------
3. **devouring** ----------
4. **chomping** ----------
5. **manducation** ----------
6. **guzzling** ----------
7. **omophagy** ----------
8. **nibbling** ----------
9. **munching** ----------

Appendix 6.2 (3): Experiment 2/ Group 1/ Session 3

1. **pongo**: soldier

2. **infantry**: foot soldiers

3. **besiegers**: soldiers surrounding a place in order to capture it

4. **mercenary**: a soldier paid to serve in a foreign country

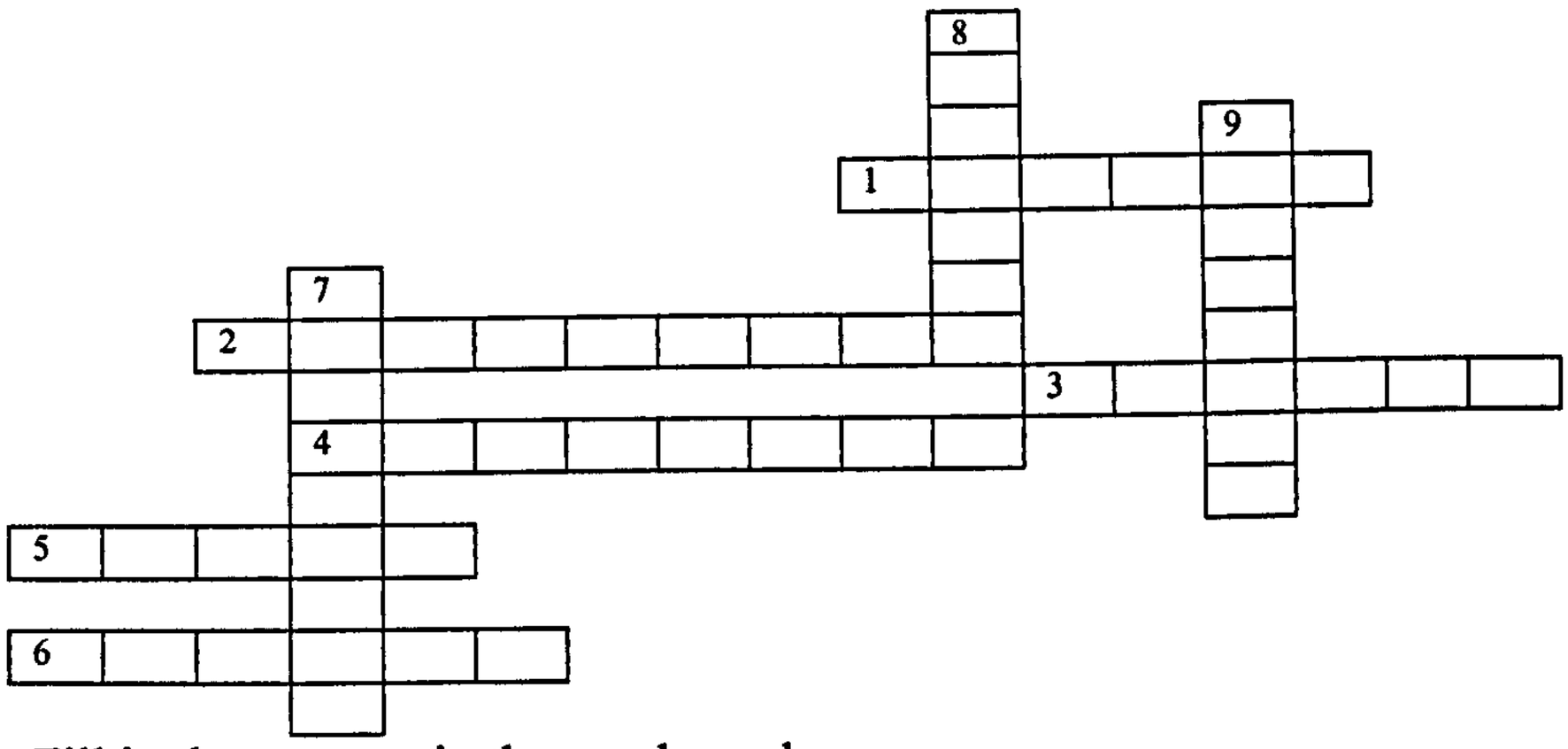
5. **sentinel**: a soldier whose job is to stand and keep watch

6. **cavalry**: soldiers who fought on horseback

7. **sapper**: a soldier carrying out engineering work

8. **sentry**: a soldier stationed to control access to a place

9. **patrol**: soldiers moving around an area to protect it



Fill in the answers in the word puzzle.

Across

1. They requested a ---------- to mend the bridge.
2. He was paid a lot of money to fly a plane as a ---------- for our army.
3. People approaching the gates were challenged by the ----------.
4. How come you are tired from walking? You were trained to be an ---------- soldier.
5. It's an honour to be a ---------- in the armed forces.
6. The ---------- walked through the streets, watching for any sign of trouble.

Down

7. The ---------- surrounded the city for six months but it refused to surrender.
8. A young ---------- officer fell from his horse during the battle.
9. The ---------- told the general when he saw the enemy's troops approaching.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **sapper** ----------
2. **sentinel** ----------
3. **mercenary** ----------
4. **sentry** ----------
5. **pongo** ----------
6. **patrol** ----------
7. **besiegers** ----------
8. **cavalry** ----------
9. **infantry** ----------

Appendix 6.2 (4): Experiment 2/ Group 1/ Session 4

1. **barque**: boat

2. **pirogue**: a boat made from a single tree trunk

3. **skiff**: a boat for one person

4. **sloop**: an armed boat

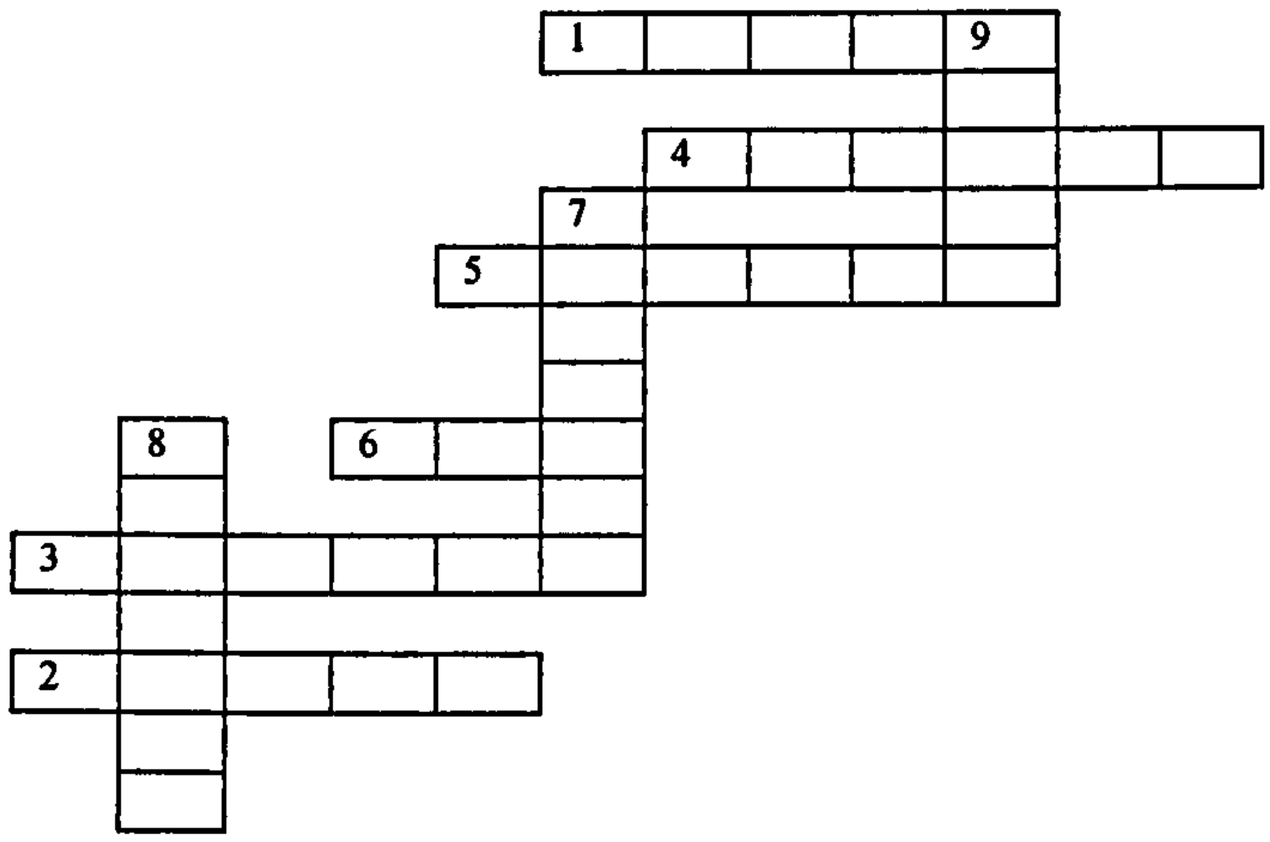
5. **ferry**: a boat for conveying passengers and goods

6. **wherry**: rowing boat

7. **trawler**: fishing boat

8. **dinghy**: racing boat

9. **tug**: a small powerful boat that pulls ships



Fill in the answers in the word puzzle.

Across

1. You can't come with me. I'm sailing in a ----------.
2. The officers in the ---------- ordered the drug dealers to stop their boat for inspection.
3. They crossed the river by ----------.
4. Let's rent a ---------- from the rowing club.
5. His ---------- won him last year's race.
6. The captain will call for a ---------- to pull our ship to the shore.

Down

7. He is so talented, as he carved out a ---------- from a tree in no time.
8. The ---------- is ready, let's go fishing.
9. The passengers are waiting for the ---------- to take them from Port Saed to Port Foad.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **pirogue** ----------
2. **skiff** ----------
3. **wherry** ----------
4. **ferry** ----------
5. **barque** ----------
6. **trawler** ----------
7. **tug**----------
8. **sloop** ----------
9. **dinghy** ----------

Appendix 6.2 (5): Experiment 2/ Group 1/ Session 5

1. **pelf**: money

2. **remittance**: money sent in payment by post

3. **indemnity**: money paid as compensation

4. **bequest**: money left to someone in a will

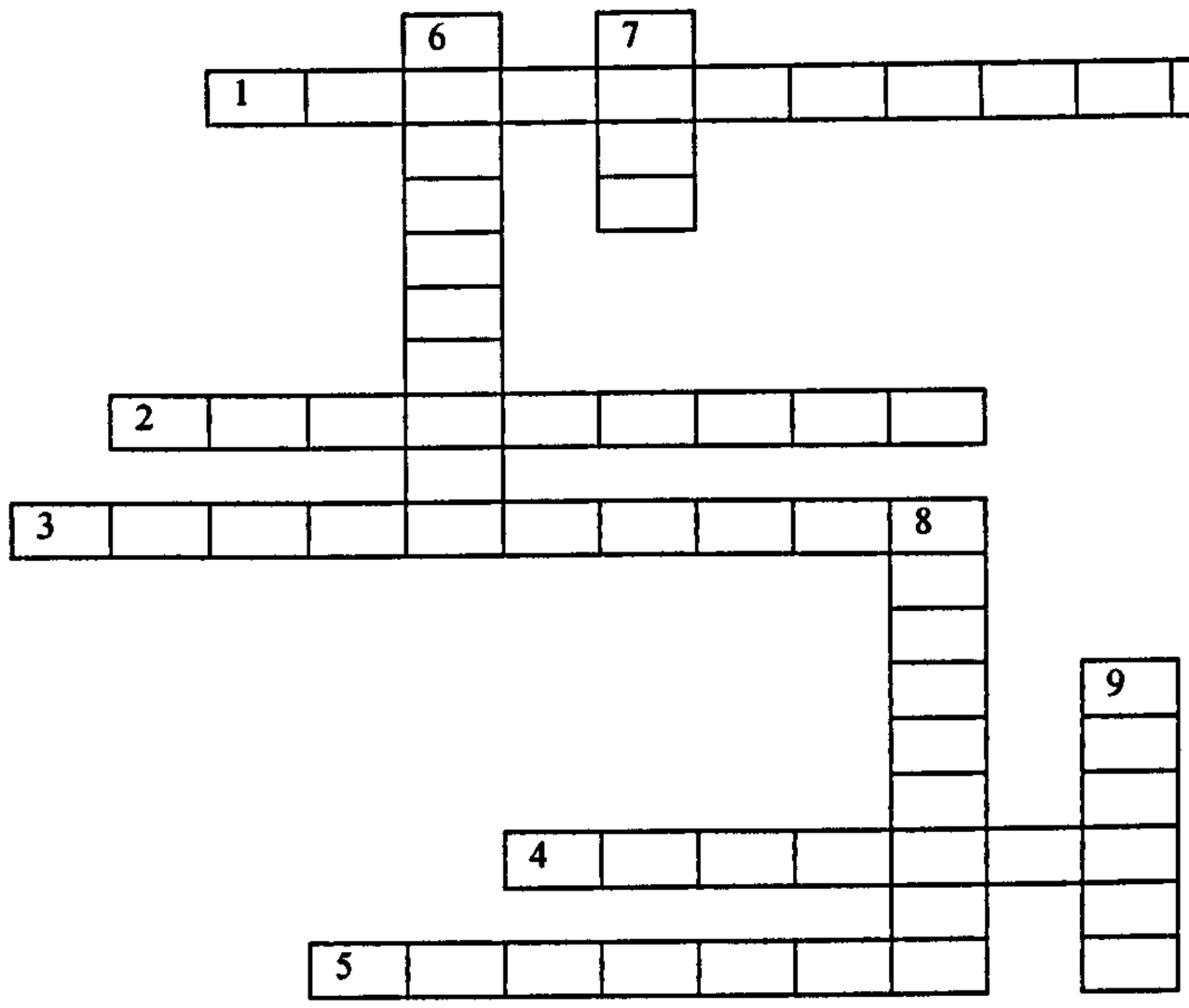
5. **wherewithal**: money needed for a particular purpose

6. **boodle**: money that is gained dishonestly

7. **defrayment**: money provided to pay a cost

8. **emolument**: money received for work

9. **stipend**: money paid regularly to a person



Fill in the answers in the word puzzle.

Across

1. Ideally I'd like to buy a bigger house but I lack the ----------.
2. The insurance company promised to pay him ---------- for the loss of his car in the accident.
3. Please send your ---------- with the completed form.
4. He depends on the ---------- he gets monthly from his university.
5. With the exception of a small ---------- to relatives, he left all his money to charity.

Down

6. You can't take the car before paying the whole ----------.
7. He doesn't usually carry much ---------- in his pockets.
8. ---------- earned by UK residents working abroad may not be taxed.
9. The thieves quarrelled with each other while dividing the ----------.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **remittance** ----------
2. **wherewithal** ----------
3. **bequest** ----------
4. **stipend** ----------
5. **pelf** ----------
6. **indemnity** ----------
7. **defrayment** ----------
8. **emolument** ----------
9. **boodle** ----------

Appendix 6.2 (6): Experiment 2/ Group 1/ Session 6

1. **apparel**: clothes

2. **layette**: clothes for a new-born baby

3. **livery**: clothes worn by a servant

4. **mufti**: civilian clothes when worn by military or police staff.

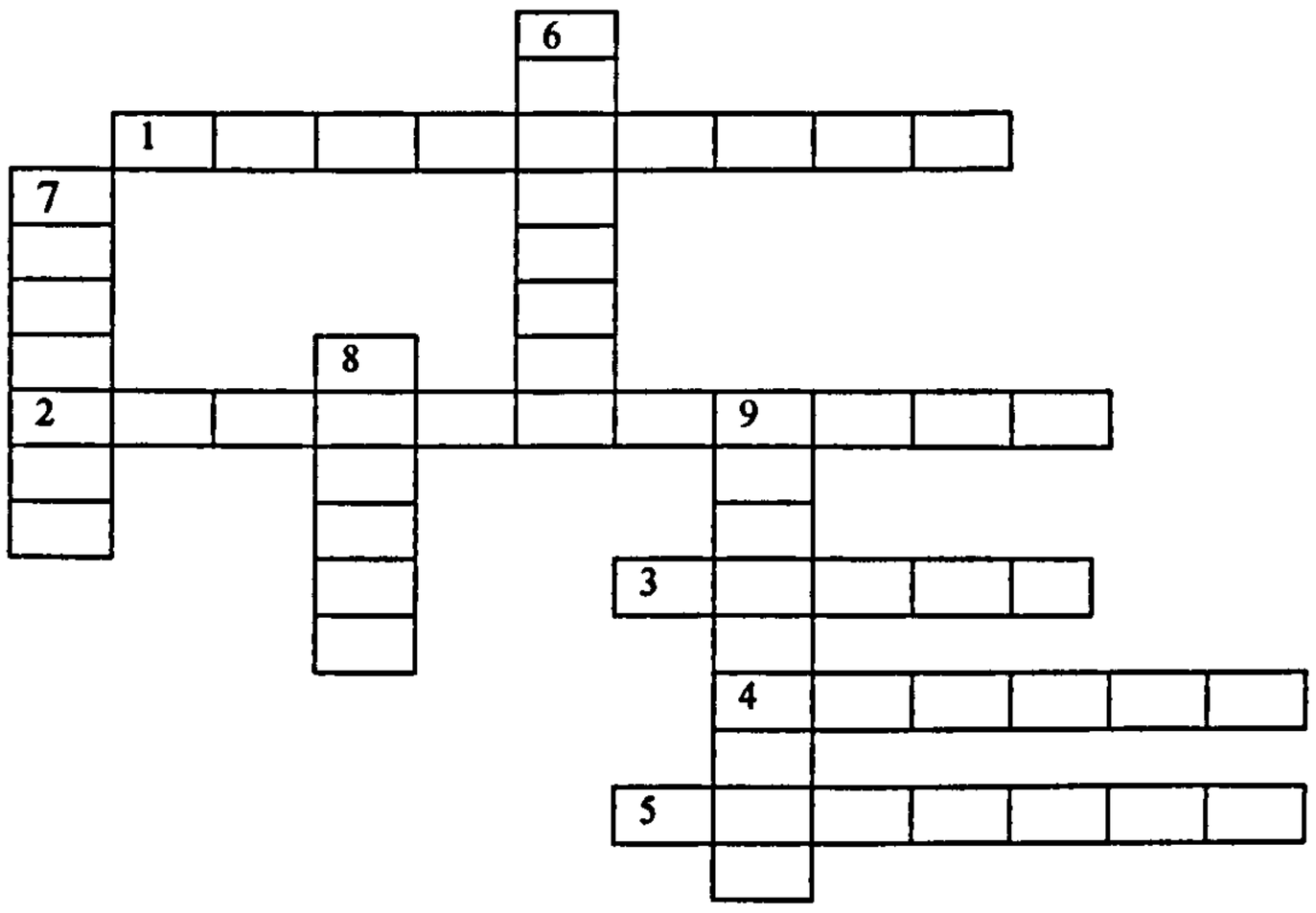
5. **regimentals**: clothes worn by military officers

6. **redingote**: woman's long coat

7. **slacks**: casual trousers

8. **trousseau**: clothes collected by a bride before the wedding

9. **pinafore**: apron



Fill in the answers in the word puzzle.

Across

1. Its cold outside, she will need a ---------- if she is going for a walk.
2. Military officers should always were clean ----------.
3. They couldn't recognise the officers as they were in ----------.
4. He wore smart grey ---------- and a dark blue jacket.
5. People usually buy a ---------- before the baby is born.

Down

6. Don't forget to put on your ---------- before you start cooking.
7. He looked handsome in his wedding ----------.
8. The servants of the king always wear the smartest ----------.
9. She bought her ---------- just before the wedding.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **regimentals** ----------
2. **slacks** ----------
3. **pinafore** ----------
4. **trousseau** ----------
5. **layette** ----------
6. **redingote** ----------
7. **apparel** ----------
8. **mufti** ----------
9. **livery** ----------

Appendix 6.3 (1): Experiment 2/ Group 2/ Session 1

Name: _____

Year: _____

Date: _____

Instructions

- On the next page (page 1) there is a list of nine words, accompanied by their English meanings. Each word is followed by a sentence to illustrate its meaning.

- You will be given **3** minutes to study the new words and their meanings. Then you will be tested on the words you have just learned.

- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **larceny**: stealing

Example: According to the Muslim's law, **larceny** should be punished by cutting off the thief's hand.

2. **looting**: stealing goods

Example: During the riots, many people were accused of **looting** goods from the shops.

3. **plundering**: stealing committed by soldiers during times of war

Example: The army is moving from town to town, killing and **plundering** as it goes.

4. **embezzlement**: stealing money placed in one's trust

Example: The manager accused the clerk of **embezzlement** after he discovered the loss of a thousand pounds from the safe.

5. **rustling**: stealing cattle

Example: The farmer brought his animals inside at night because there had been a recent outbreak of cattle **rustling**.

6. **mugging**: stealing from someone in a public place

Example: There are police officers everywhere in the park after yesterday's reported **mugging.**

7. **brigandage**: stealing from people in forests and mountains

Example: Camping in the forest in not safe right now as there was a reported **brigandage** last week.

8. **pilfering**: stealing things of little value

Example: The boy was accused of **pilfering** after the teacher saw him searching another child's bag.

9. **pillaging**: stealing with violence

Example: A lot of **pillaging** went on during the riots and many people were injured.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **plundering** ----------
2. **pilfering** ----------
3. **embezzlement** ----------
4. **looting** ----------
5. **larceny** ----------
6. **brigandage** ----------
7. **mugging** ----------
8. **pillaging** ----------
9. **rustling** ----------

Appendix 6.3 (2): Experiment 2/ Group 2/ Session 2

1. **manducation**: eating

Example: **Manducation** is the action of the lower jaw when chewing food, and preparing it in the mouth before it is received into the stomach.

2. **nibbling**: eating in small amounts

Example: Aren't you hungry? You are only **nibbling** your food.

3. **guzzling**: eating greedily

Example: He is so greedy, he is always **guzzling** at meal times.

4. **voracity**: eating great quantities of food.

Example: Did you eat the whole chicken? Your **voracity** for food is abnormal.

5. **omophagy**: eating raw food

Example: **Omophagy** still exists in some remote African tribes.

6. **munching**: eating steadily

Example: There was an old dog in the back yard **munching** his food with great care.

7. **devouring**: eating quickly

Example: Why are you **devouring** your food like that? Do you have something urgent to do after lunch?

8. **chomping**: eating noisily

Example: Stop **chomping** your food. The noise you're making is extremely annoying.

9. **grazing**: eating snacks

Example: Some families don't sit down to proper meals, they are just **grazing**.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **voracity** ----------
2. **grazing** ----------
3. **devouring** ----------
4. **chomping** ----------
5. **manducation** ----------
6. **guzzling** ----------
7. **omophagy** ----------
8. **nibbling** ----------
9. **munching** ----------

Appendix 6.3 (3): Experiment 2/ Group 2/ Session 3

1. **pongo**: soldier

Example: It's an honour to be a **pongo** in the armed forces.

2. **infantry:** foot soldiers

Example: How come you are tired from walking? You were trained to be an **infantry** soldier.

3. **sentinel**: a soldier whose job is to stand and keep watch

Example: The **sentinel** told the general when he saw the enemy's troops approaching.

4. **sentry:** a soldier stationed to control access to a place

Example: People approaching the gates were challenged by the **sentry.**

5. **sapper:** a soldier carrying out engineering work

Example: They requested a **sapper** to mend the bridge.

6. **mercenary**: a soldier paid to serve in a foreign country

Example: He was paid a lot of money to fly a plane as a **mercenary** for our army.

7. **besiegers**: armed soldiers surrounding a place in order to capture it

Example: The **besiegers** surrounded the city for six months but it refused to surrender.

8. **cavalry**: soldiers who fought on horseback

Example: A young **cavalry** officer fell from his horse during the battle.

9. **patrol**: soldiers moving around an area to protect it

Example: The **patrol** walked through the streets, watching for any sign of trouble.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **sapper** ----------
2. **sentinel** ----------
3. **mercenary** ----------
4. **sentry** ----------
5. **pongo** ----------
6. **patrol** ----------
7. **besiegers** ----------
8. **cavalry** ----------
9. **infantry** ----------

Appendix 6.3 (4): Experiment 2/ Group 2/ Session 4

1. **barque**: boat

Example: They crossed the river by **barque.**

2. **pirogue**: a boat made from a single tree trunk

Example: He is very talented, He carved out a **pirogue** from a tree in no time.

3. **skiff**: a boat for one person

Example: You can't come with me, I'm sailing in a **skiff.**

4. **sloop**: an armed boat

Example: The officers in the **sloop** ordered the drug dealers to stop their boat for inspection.

5. **ferry**: a boat for conveying passengers and goods

Example: The passengers are waiting for the **ferry** to take them from Port Saed to Port Foad.

6. **wherry**: rowing boat

Example: Let's rent a **wherry** from the rowing club.

7. **trawler:** fishing boat

Example: The **trawler** is ready, lets go fishing.

8. **dinghy**: racing boat

Example: His **dinghy** won him last year's race.

9. **tug**: a small powerful boat that pulls ships.

Example: The captain will call for a **tug** to pull our ship to the shore.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **pirogue** ----------
2. **skiff** ----------
3. **wherry** ----------
4. **ferry** ----------
5. **barque** ----------
6. **trawler** ----------
7. **tug**----------
8. **sloop** ----------
9. **dinghy** ----------

Appendix 6.3 (5): Experiment 2/ Group 2/ Session 5

1. **pelf**: money

Example: He doesn't usually carry much **pelf** in his pockets.

2. **remittance**: money sent in payment by post

Example: Please send your **remittance** with the completed form.

3. **indemnity**: money paid as compensation

Example: The insurance company promised to pay him **indemnity** for the loss of his car in the accident.

4. **bequest**: money left to someone in a will

Example: With the exception of few small **bequests** to relatives, he left all his money to charity.

5. **wherewithal**: money needed for a particular purpose

Example: Ideally I'd like to buy a bigger house but I lack the **wherewithal**.

6. **boodle**: money that is gained dishonestly

Example: The thieves quarrelled with each other while dividing the **boodle**.

7. **defrayment**: money provided to pay a cost

Example: You can't take the car before paying the whole **defrayment**.

8. **emolument**: money received for work

Example: **Emolument** earned by UK residents working abroad may not be taxed.

9. **stipend:** money paid regularly to a person

Example: He depends on the **stipend** he gets monthly from his university.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **remittance** ----------
2. **wherewithal** ----------
3. **bequest** ----------
4. **stipend** ----------
5. **pelf** ----------
6. **indemnity** ----------
7. **defrayment** ----------
8. **emolument** ----------
9. **boodle** ----------

Appendix 6.3 (6): Experiment 2/ Group 2/ Session 6

1. apparel: clothes

Example: He looked handsome in his wedding **apparel.**

2. layette: clothes for a new-born baby

Example: People usually buy a **layette** before the baby is born.

3. livery: clothes worn by a servant

Example: The servants of the King always wear the smartest **livery.**

4. mufti: civilian clothes when worn by military or police staff

Example: They couldn't recognise the officers as they were in **mufti.**

5. regimentals: clothes worn by military officers

Example: Military officers should always wear clean **regimentals.**

6. redingote: woman's long coat

Example: It's cold outside, she will need a **redingote** if she is going for a walk.

7. slacks: casual trousers

Example: He wore smart grey **slacks** and a dark blue jacket.

8. trousseau: clothes collected by a bride for her marriage

Example: She bought her **trousseau** just before the wedding.

9. pinafore: apron

Example: Don't forget to put on your **pinafore** before you start cooking.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **regimentals** ----------
2. **slacks** ----------
3. **pinafore** ----------
4. **trousseau** ----------
5. **layette** ----------
6. **redingote** ----------
7. **apparel** ----------
8. **mufti** ----------
9. **livery** ----------

Appendix 6.4 (1): Experiment 2/ Group 3/ Session 1

Name: _____

Year: _____

Date: _____

Instructions

- Below is a list of nine words, accompanied by their English meanings.
- You will be given **3** minutes to study the new words and their meanings then you will be tested on the words you have just learned.
- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **larceny**: stealing
2. **looting**: stealing goods
3. **pilfering**: stealing things of little value
4. **embezzlement**: stealing money placed in one's trust
5. **rustling**: stealing cattle
6. **brigandage**: stealing from people in forests and mountains
7. **pillaging**: stealing with violence
8. **mugging**: stealing from someone in a public place
9. **plundering**: stealing committed by soldiers during war

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **plundering** ----------

2. **pilfering** ----------

3. **embezzlement** ----------

4. **looting** ----------

5. **larceny** ----------

6. **brigandage** ----------

7. **mugging** ----------

8. **pillaging** ----------

9. **rustling** ----------

Appendix 6.4 (2): Experiment 2/ Group 3/ Session 2

Name: _____

Year: _____

Date: _____

Instructions

- Below is a list of nine words, accompanied by their English meanings.

- You will be given **3** minutes to study the new words and their meanings then you will be tested on the words you have just learned.

- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **manducation**: eating

2. **nibbling**: eating in small amounts

3. **guzzling**: eating greedily

4. **voracity**: eating great quantities of food

5. **omophagy**: eating raw food

6. **munching**: eating steadily

7. **devouring**: eating quickly

8. **chomping**: eating noisily

9. **grazing**: eating snacks

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **voracity** _____
2. **grazing** _____
3. **devouring** _____
4. **chomping** _____
5. **manducation** _____
6. **guzzling** _____
7. **omophagy** _____
8. **nibbling** _____
9. **munching** _____

Appendix 6.4 (3): Experiment 2/ Group 3/ Session 3

Name: _____

Year: _____

Date: _____

Instructions

- Below is a list of nine words, accompanied by their English meanings.
- You will be given **3** minutes to study the new words and their meanings then you will be tested on the words you have just learned.
- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **pongo**: soldier
2. **infantry**: foot soldiers
3. **sentinel**: a soldier whose job is to stand and keep watch
4. **sentry**: a soldier stationed to control access to a place
5. **sapper**: a soldier carrying engineering work
6. **mercenary**: a soldier who is paid to serve in a foreign country
7. **besiegers**: armed soldiers surrounding a place in order to capture it
8. **cavalry**: soldiers who fought on horse back
9. **patrol**: soldiers moving around an area to protect it

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **sapper** _____
2. **sentinel** _____
3. **mercenary** _____
4. **sentry** _____
5. **pongo** _____
6. **patrol** _____
7. **besiegers** _____
8. **cavalry** _____
9. **infantry** _____

Appendix 6.4 (4): Experiment 2/ Group 3/ Session 4

Name: _____

Year: _____

Date: _____

Instructions

- Below is a list of nine words, accompanied by their English meanings.

- You will be given **3** minutes to study the new words and their meanings then you will be tested on the words you have just learned.

- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **barque:** boat
2. **pirogue:** a boat made from a single tree trunk
3. **skiff:** a boat for one person
4. **sloop:** an armed boat
5. **ferry:** a boat for conveying passengers and goods
6. **wherry:** rowing boat
7. **trawler:** fishing boat
8. **dinghy:** racing boat
9. **tug:** a small powerful boat that pulls ships

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **pirogue** ----------
2. **skiff** ----------
3. **wherry** ----------
4. **ferry** ----------
5. **barque** ----------
6. **trawler** ----------
7. **tug** ----------
8. **sloop** ----------
9. **dinghy** ----------

Appendix 6.4 (5): Experiment 2/ Group 3/ Session 5

Name: _____

Year: _____

Date: _____

Instructions

- Below is a list of nine words, accompanied by their English meanings.
- You will be given **3** minutes to study the new words and their meanings then you will be tested on the words you have just learned.
- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. pelf: money

2. remittance: money sent in payment by post

3. indemnity: money paid as compensation

4. bequest: money left to someone in a will

5. wherewithal: money needed for a particular purpose

6. boodle: money that is gained dishonestly

7. defrayment: money provided to pay a cost

8. emolument: money received for work

9. stipend: money paid regularly to a person

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **remittance** ----------
2. **wherewithal** ----------
3. **bequest** ----------
4. **stipend** ----------
5. **pelf** ----------
6. **indemnity** ----------
7. **defrayment** ----------
8. **emolument** ----------
9. **boodle** ----------

Appendix 6.4 (6): Experiment 2/ Group 3/ Session 6

Name: _____

Year: _____

Date: _____

Instructions

- Below is a list of nine words, accompanied by their English meanings.
- You will be given **3** minutes to study the new words and their meanings then you will be tested on the words you have just learned.
- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **apparel**: clothes
2. **layette**: clothes for a new-born baby
3. **livery**: clothes worn by a servant
4. **mufti**: civilian clothes when worn by military or police staff
5. **trousseau**: clothes collected by a bride for her marriage
6. **regimentals**: clothes worn by military officers
7. **redingote**: woman's long coat
8. **slacks**: casual trousers
9. **pinafore**: apron

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **regimentals** ----------
2. **slacks** ----------
3. **pinafore** ----------
4. **trousseau** ----------
5. **layette** ----------
6. **redingote** ----------
7. **apparel** ----------
8. **mufti** ----------
9. **livery** ----------

Appendix 6.5 (1): Experiment 2/ Group 4/ Session 1

Name: _____

Year: _____

Date: _____

Instructions

- On the next page (page 1) there is a list of nine words, accompanied by their English meanings. Each word is followed by a sentence to illustrate its meaning.

- You will be given **3** minutes to study the new words and their meanings. Then you will be tested on the words you have just learned.

- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **larceny**: stealing

Example: According to the Muslim's law, **larceny** should be punished by cutting off the thief's hand.

2. **infringement**: violation of the law

Example: Ignoring a red light is an **infringement** of traffic law.

3. **slammer**: prison

Example: He's doing five to ten years in the **slammer.**

4. **crookedness**: dishonesty

Example: The **crookedness** of his business dealings led him to jail.

5. **booty**: valuable stolen goods

Example: The thieves hid their **booty** in a cave.

6. **committal**: sending to prison

Example: In the UK, a maximum of 10 days may pass between **committal** and trial.

7. **manacles**: pair of chains for fastening hands or feet

Example: His hands were in **manacles** behind his back.

8. **restitution**: restoration of something stolen

Example: He was very happy at the **restitution** of his stolen property.

9. **filcher**: thief

Example: A **filcher** has stolen his wallet.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **restitution** ----------
2. **filcher** ----------
3. **crookedness** ----------
4. **booty** ----------
5. **larceny** ----------
6. **manacles** ----------
7. **committal** ----------
8. **infringement** ----------
9. **slammer** ----------

Appendix 6.5 (2): Experiment 2/ Group 4/ Session 2

1. **manducation**: eating

Example: **Manducation** is the action of the lower jaw in chewing food, and preparing it in the mouth before it is received into the stomach.

2. **obesity**: the state of being overweight.

Example: Excessive consumption of sugar may lead to problems of **obesity.**

3. **banquet**: formal meal for many people

Example: A famous cook was hired to prepare a **banquet** for the new governor.

4. **mandibles**: jaws

Examples: I found a sheep's skull in the desert but the **mandibles** were missing.

5. **victuals**: food

Example: We can't survive for long without **victuals** and water.

6. **garnish**: decoration of food

Example: Use cucumber slices as a final **garnish** of the dish.

7. **savour**: taste

Example: The soup has a slight **savour** of garlic.

8. **crockery**: plates and cups used at meals times

Example: The sink was full of piles of dirty **crockery.**

9. **recipe**: a set of instructions for cooking a dish

Example: The **recipe** says you need four eggs and 250g of chocolate.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **obesity** ----------

2. **garnish** ----------

3. **savour** ----------

4. **recipe** ----------

5. **crockery** ----------

6. **banquet** ----------

7. **manducation** ----------

8. **mandibles** ----------

9. **victuals** ----------

Appendix 6.5 (3): Experiment 2/ Group 4/ Session 3

1. **pongo**: soldier

Example: It's an honour to be a **pongo** in the armed forces.

2. **gallantry**: courage in a battle

Example: He was awarded a medal for his **gallantry.**

3. **conscription**: compulsory enlisting in the armed forces

Example: In times of war, **conscription** of able-bodied men increases.

4. **rations**: food supplied on a regular basis to soldiers during a war.

Example: The soldiers' daily **rations** were limited.

5. **accoutrements**: a soldier's outfit

Example: The officer looks smart in his **accoutrements.**

6. **munitions**: military weapons

Example: The army used precision-guided **munitions** to blow up enemy targets.

7. **sniping**: shooting at someone from a hiding place at long range

Example: Accurate **sniping** from well-concealed positions is a skill of a good soldier.

8. **skirmish**: minor battle

Example: Border **skirmishes** between India and Pakistan are common.

9. **garrison**: the buildings which the soldiers live in

Example: American troops still have **garrisons** in the Gulf area.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **skirmish** ----------
2. **munitions** ----------
3. **rations** ----------
4. **accoutrements** ----------
5. **pongo** ----------
6. **gallantry** ----------
7. **garrison** ----------
8. **conscription** ----------
9. **sniping** ----------

Appendix 6.5 (4): Experiment 2/ Group 4/ Session 4

1. **barque**: boat

Example: They crossed the river by **barque.**

2. **pharos**: lighthouse

Example: Alexandria's **pharos** is one of the Seven Wonders of the World.

3. **matelot**: sailor

Example: A good **matelot** rarely becomes sick at sea in rough water.

4. **brine** : sea water

Example: Most of the earth is covered by **brine.**

5. **salvaging**: rescuing a boat from loss at sea

Example: The **salvaging** operation was successful and the boat returned safely to the shore.

6. **helm**: a wheel for steering the boat

Example: Someone more competent than me had better take the **helm** if this wind increases.

7. **berth**: bed on a boat

Example: He booked a **berth** on the first boat he could.

8. **mooring**: a place where the boat is tied so it cannot drift away

Example: **Mooring** fees are high in this area so we can't keep our boat here.

9. **flotsam**: a wreckage of a boat floating on the sea

Example: The rescue team discovered the place where the boat has sunk from the **flotsam** in the water.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **flotsam** ----------
2. **brine** ----------
3. **helm** ----------
4. **berth** ----------
5. **matelot** ----------
6. **barque** ----------
7. **salvaging** ----------
8. **mooring** ----------
9. **pharos** ----------

Appendix 6.5 (5): Experiment 2/ Group 4/ Session 5

1. **pelf**: money

Example: He doesn't usually carry much **pelf** in his pocket.

2. **insolvency**: bankruptcy

Example: If he is unable to pay his debts; it seems that the bank will force him into **insolvency.**

3. **billfold**: wallet

Example: He got out a **billfold** stuffed with banknotes.

4. **opulence**: wealth

Example: Karun was a man of great **opulence.**

5. **exorbitance**: expensiveness

Example: I can't believe the **exorbitance** of the prices in this hotel.

6. **miser:** a rich person who hates spending money

Example: He had a reputation for being a wealthy **miser** who would never pay for anything if he could possibly avoid it.

7. **avarice**: greed for money

Example: No one believes that football clubs are not motivated by **avarice.**

8. **mint**: a place in which money is officially made by the government

Example: British coins are produced in the Royal **Mint.**

9. **profligacy**: extravagance

Example: Hatem AL-Taey is known for his **profligacy.**

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **profligacy** ----------
2. **avarice** ----------
3. **exorbitance** ----------
4. **billfold** ----------
5. **pelf** ----------
6. **mint** ----------
7. **insolvency**----------
8. **opulence** ----------
9. **miser** ----------

Appendix 6.5 (6): Experiment 2/ Group 4/ Session 6

1. **apparel**: clothes

Example: He looked handsome in his wedding **apparel.**

2. **haberdashery**: a shop selling men's clothes

Example: He doesn't like to deal with tailors and buys all his clothes from a **haberdashery**.

3. **foppishness**: excessive concern with clothes and appearance

Example: I can't believe his **foppishness**; he stands in front of the mirror for hours.

4. **seamstress**: a woman whose job is sewing

Example: After her husband's death, she worked as a **seamstress** to look after her family.

5. **couture**: design and manufacture of clothes

Example: Rich people buy their clothes from famous **couture** houses such as Channel.

6. **drapery**: cloth

Example: I don't have enough **drapery** to make a suit.

7. **vogue**: the fashion at a certain time

Example: Short hair has come back into **vogue.**

8. **detergent**: a chemical product used for cleaning clothes

Example: Put 120ml of **detergent** into the washing machine.

9. **loom**: a machine used for weaving thread into cloth

Example: This **loom** needs to be fixed as it is producing damaged cloth.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **loom** ----------
2. **seamstress** ----------
3. **couture** ----------
4. **detergent** ----------
5. **vogue** ----------
6. **apparel** ----------
7. **drapery** ----------
8. **foppishness** ----------
9. **haberdashery** ----------

Appendix 6.6 (1): Experiment 2/ Group 5/ Session 1

Name: _____

Year: _____

Date: _____

Instructions

- On the next page (page 1) there is a list of nine words, accompanied by their English meanings. Each word is followed by a sentence to illustrate its meaning.

- You will be given **3** minutes to study the new words and their meanings. Then you will be tested on the words you have just learned.

- There is an extra sheet (page 2) to be used if you need to write the words while studying them.

1. **larceny**: stealing

Example: According to the Muslim's law, **larceny** should be punished by cutting off the thief's hand.

2. **magnitude**: size

Example: No one seems to realise the **magnitude** of this problem.

3. **demission**: resignation

Example: The minister has agreed to withdraw his letter of **demission.**

4. **consent**: permission

Example: You can't join the trip without my **consent.**

5. **disparity**: a great difference

Example: There is such **disparity** in the standards of living between rich and poor.

6. **frigate**: a warship

Example: The **frigate** sank after its exposure to an air attack.

7. **reverence**: deep respect

Example: Let us stand for a minute's silence in **reverence** for the dead.

8. **interment**: the burial of a corpse in a grave

Example: The undertaker has prepared the body for **interment.**

9. **fatigue**: extreme tiredness

Example: Increasing number of people in high-powered jobs are suffering from **fatigue** and stress-related illness.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **fatigue** ----------

2. **interment** ----------

3. **reverence** ----------

4. **disparity** ----------

5. **demission** ----------

6. **larceny** ----------

7. **magnitude** ----------

8. **frigate** ----------

9. **consent** ----------

Appendix 6.6 (2): Experiment 2/ Group 5/ Session 2

1. **manducation**: eating

Example: **Manducation** is the action of the lower jaw in chewing food, and preparing it in the mouth before it is received into the stomach.

2. **denizen**: inhabitant

Example: As far as we know, there are no **denizens** on the moon.

3. **dexterity**: skill in performing tasks with the hands

Example: The ball was caught with great **dexterity.**

4. **poltroon**: a coward

Example: He was too much of a **poltroon** to jump from the highest diving board.

5. **stroller**: a baby's pushchair

Example: At first he was embarrassed to be seen pushing a **stroller** down the street.

6. **potency**: power

Example: The **potency** of these weapons is far greater than anything previously available.

7. **succour**: help given to people who are suffering

Example: She crossed the enemy lines, disguised as a civilian, to bring medical **succour** to the Resistance fighters.

8. **foliage**: plant leaves

Example: She put some dark green **foliage** in the vase with the roses.

9. **ailment**: illness which is not very serious

Example: The pharmacist can assist you with the treatment of common **ailments.**

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **potency** ----------
2. **stroller** ----------
3. **succour** ----------
4. **foliage** ----------
5. **manducation** ----------
6. **denizen** ----------
7. **dexterity** ----------
8. **poltroon** ----------
9. **ailment** ----------

Appendix 6.6 (3): Experiment 2/ Group 5/ Session 3

1. **pongo**: soldier

Example: It's an honour to be a **pongo** in the armed forces.

2. **jalopy**: old car

Example: We can't travel from Assuit to Cairo in this **jalopy.**

3. **chastisement**: punishment

Example: I have no doubt that the man is guilty and that he deserves **chastisement.**

4. **infirmary**: hospital

Example: After the accident, she was taken to the **infirmary.**

5. **arduousness**: difficulty

Example: The **arduousness** of the task excited them.

6. **censure**: severe disapproval

Example: It's a controversial policy which has attracted international **censure.**

7. **penury**: extreme poverty

Example: **Penury** prevented the boy from continuing his education.

8. **sapling**: young tree

Example: Newly planted **saplings** are swaying gently in the spring breeze.

9. **chinwag**: a chat

Example: Yesterday, I met my friend for the first time in 2 years, we had a long **chinwag** about old times.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **penury** ----------
2. **jalopy** ----------
3. **chastisment** ----------
4. **sapling** ----------
5. **pongo** ----------
6. **censure** ----------
7. **arduousness** ----------
8. **infirmary** ----------
9. **chinwag** ----------

Appendix 6.6 (4): Experiment 2/ Group 5/ Session 4

1. **barque**: boat

Example: They crossed the river by **barque.**

2. **tumbler**: an acrobat

Example: In his youth, he was briefly employed as a circus **tumbler.**

3. **pledge**: promise

Example: When you make a **pledge,** you should always try to fulfil it.

4. **foe**: enemy

Example: The two countries have united against their common **foe.**

5. **contagion**: the spreading of a disease by close contact

Example: Because of an outbreak of measles, the school was closed to avoid further **contagion.**

6. **sneakers**: sports shoes

Example: I can't find my **sneakers** to go running with you.

7. **abode**: a place where someone lives

Example: I don't like where I live so I am looking for a new **abode.**

8. **pittance**: a very small amount of money

Example: She works very hard but only earns a **pittance.**

9. **fags**: cigarettes

Example: He smokes 40 **fags** a day.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **fags** ----------
2. **pittance** ----------
3. **abode** ----------
4. **tumbler** ----------
5. **barque** ----------
6. **contagion** ----------
7. **pledge** ----------
8. **foe** ----------
9. **sneakers** ----------

Appendix 6.6 (5): Experiment 2/ Group 5/ Session 5

1. **pelf**: money

Example: He doesn't carry much **pelf** in his pockets.

2. **ooze**: mud at the bottom of a river

Example: He dived till he reached the **ooze.**

3. **penitence**: remorse

Example: He shows no **penitence** for his crime.

4. **aroma**: pleasant smell

Example: The cook is enjoying the wonderful **aroma** of freshly baked bread.

5. **emulation**: imitation

Example: Ahmed Zoweil is a role model worthy of **emulation.**

6. **pugilist**: boxer

Example: Mohamed Ali was a great **pugilist.**

7. **vagrant**: a person without home

Example: There is much homelessness in this country, the government should build more shelters for **vagrants.**

8. **fidelity**: loyalty

Example: The soldiers have promised **fidelity** to their country.

9. **diminution**: reduction

Example: Some people say that you can achieve a general **diminution** in your stress level by taking regular exercise.

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **pugilist** ----------
2. **vagrant** ----------
3. **emulation** ----------
4. **aroma** ----------
5. **pelf** ----------
6. **ooze** ----------
7. **penitence** ----------
8. **fidelity** ----------
9. **diminution** ----------

Appendix 6.6 (6): Experiment 2/ Group 5/ Session 6

1. **apparel**: clothes

Example: He looked handsome in his wedding **apparel.**

2. **blossom**: a flower on a tree

Example: The scent of apple **blossoms** filled the air.

3. **vigour**: physical strength

Example: His body lacks the bounce and **vigour** of a normal three-year-old child.

4. **tidings**: news

Example: He hated to be the carrier of the bad **tidings.**

5. **peril**: great danger

Example: The journey through the mountains was fraught with **peril.**

6. **dromedary**: an Arabian camel

Example: The nomad has lost his **dromedary** in the desert.

7. **betrothal**: engagement

Example: Their **betrothal** was announced in Al-Ahram newspaper.

8. **genocide**: deliberate murder of a whole community or race

Example: The acts of **genocide** and torture that were carried in Rwanda were unbelievable.

9. **scribe**: journalist

Example: Ahmed Ragab is a great **scribe.**

Name: _____

Year: _____

Date: _____

Write the meaning of the following words:

1. **scribe** ----------
2. **blossom** ----------
3. **dromedary** ----------
4. **genocide** ----------
5. **apparel** ----------
6. **betrothal** ----------
7. **tidings** ----------
8. **peril** ----------
9. **vigour** ----------

Appendix 7.1: New Word Sets in Hello 1 [Primary Phase: Year 4]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings	Formal/ Phonological Groupings
1	1	left, right			
	3				cat, hat, rat
2	3				pen, hen, ten
3	2	yes, no			
	3		book, page	open, look, exercise	pin, tin
4	1	classroom, desk, chair, teacher, boy, girl		see, picture, thing	
	2	draw, say, write			
	3				top, dog, pot
5	1	stand, sit		fine, thanks, good morning, school	
	2			song, hope	
	3	good afternoon, good bye			bun, gun, sun
6	2			put, right, word, place (n.), window, table	
7	2	hand, head		board, point	
	3	pencil, ruler, rubber		give, please, door	
8	1	eat, drink / man, woman	clap, sing, dance, band		
	2		wedding, cake, sherbet		
	3				fat, fan, fish/ jam, jacket, jump
9	1	dust, wash, sweep		tea, bed, dress, floor, pan, make, car	
	2				
	3		kick, ball	key, help	
10	1	farmer, mechanic, nurse/ farm, hospital, workshop			
	3				question, quarter, mosque
11	1	old, young / bad, good			
	2			something, now	
12	1	colours, blue, red, green, brown, yellow, white, black, orange			
	3	triangle, circle, square			van, videotape, vase
13	1	clothes, shirt, shoes, shorts, socks, galabeya			
	2			get, letter	
	3			bottle, pair	
14	1	family, father, mother, brother, sister, grandfather, grandmother		box, zoo	
15	1	tall, short, long		friend, hair, thin	
	2			tree, sleep, here	
16	1			sound, jar, ride, nice, wear, come, riddle	
	2			house, food, pencil box, puzzle, orange, skirt, take, want	
17	1	bread, meat, ice-cream, coffee, milk, sweets, sandwich, / tick, cross			

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings	Formal/ Phonological Groupings
18	1		watch, TV	every, day, time, homework, evening, get up	
	3	body, face, leg, arm, foot			cheese, chair, church
19	1	cow, goat, bird / sugar cane, cotton	field, pump, river, water, flowers		
	2	plants, animals		big, beautiful, garden, grow	
20	1	safe, dangerous	road, pavement, traffic lights, stop, wait, go, cross (v.)	again, nothing	
	2	days of the week		across, run, back, policeman, angry, hit	
21	1			music, excuse, tell, Egyptian	
	2	question, answer	brush, teeth	way, early, ping pong, before	
22	1			juice, want, shopping	
	2		buy, change (n.), piasters, shopkeeper, list, price/ candles, matches	OK, packet, each	
	3	the months January to June / today, tomorrow		other, half, telephone, move	
23	1		sphinx, pyramids, camel	lion, follow, very, welcome, show, talk	
	2			great, know, true, guide, all	
	3	the months July to December / month, year, week			
24	1	ploughing, planting, harvesting/ weather, windy, raining, hot, cold, warm			
	2	seasons, winter, spring, summer, autumn	fly, kite		
25	1			between, difference	
	2			over, fun, lesson, fast, high	

Appendix 7.2: New Word Sets in Hello 2 [Primary Phase: Year 5]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings	Formal/Phonological Groupings
1	2	football, game		favourite, programme, remember, under, primary, subject	
2	1			clown, swim, drive, bingo, space, winner, horse, bicycle	
	2	clever, silly		funny, read	
	3			speak, English	glass, glasses
3	1	hippo, monkey, elephant, giraffe/ tail, ears			
	2			wings, nose, mix	
	3	plane, bus			sleep, slow
4	1	blouse, pullover, t-shirt, jeans			
	3		sky, moon	wish, crossword	
5	1	flat, sitting room, kitchen, bedroom, bathroom	tooth paste, tube	piece, biscuits	
	2	mum, dad		chicken, supper, idea, story, mean, plus	
	3				fridge, fruit
6	2			action, happy	
7	1	kettle, teapot, plate, cup, knife, sink, cooker, cupboard			
	2			last, night, yesterday, tidy, example	
	3			grass, pray, present, train	
8	1	quite, noisy / rich, poor			
	2	metro, tram		born, live, maths, hotel, building, lots of	
	3				smoke, smile
9	1		listen, radio / pond, fishing	chasing, picking, park, bees	
	2			naughty, afraid, matter, visit, after	
	3				snake, snail/ spoon, spell
10	1		builder, machine, pouring, cut, carry, pull, splitting, wood, blocks, stones		
	2			ancient, huge, ship, expand, site, past, interesting, drag, workmen, onto, sledges, side, finally	
11	1	meals, breakfast, lunch/ macaroni, eggs, chips, rice, shrimps			
	2			round, lemon, comb	
12	1	middle, bottom		wrong, canal	
	3			difficult, exam	rectangle, robot
13	1	supermarket, market / tomatoes, onions, watermelon, banana			
	2	cafeteria, garage, police station	town, map, street		
	3		directions, turn along, opposite		
14	1			computer, both	
	2				beans, near, hear
	3		height, metres		
15	1	quarrelling, fighting	money, thief	strong, begin, new	
	2			home, beat, weak, trick, away	

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings	Formal/Phonological Groupings
16	1	above, below			
17	3			doctor, life	
18	1			factory, fall, next, rabbit, happen	
	2			future, sea, perhaps, dirty, everybody	
	4	job, carpenter, dressmaker, baker/ bake, mend			
19	1			dinner, mice, hurt	
	2		shoot, kill	meet, feed, bell, neck, better	
	3			children, careful, shout, behave, worry, look after	
	4			best, alphabet, take off, hole, back, note	
20	1	handball, basketball, weigh lifting, high jump			
	2		sport, team	most, choose, heavy, lift, person, call, try, basket, throw, people, goal	
	3	karate, tennis		survey, group, leader, add, results, total, paper, like	
21	1	up, down			
	2			rocket, earth, cook, form, careless	
22	1	beside, behind		wallet, everything	
	3		steal, robbery		
	4			path, sack, catch	
23	1	nobody, somebody		well, dead, break, accident	
	2			frightened, cry, wait, still, care, neighbours, alone, wife, die	
	4				trace, sentence, ice
24	1			umbrella, zebra, spot, mirror	
	3			stick, cart, push, real, wonderful, fellow, footprints, superman	
	4		bar, soap	sick, never	
25	2			climb, vegetables, part	

Appendix 7.3: New Word Sets in Hello 3 [Preparatory Phase: Year 1]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
1	2			
	3			paragraph, fill in, finish
	4	social studies, algebra, religion, science, physical education		
2	1			close (v.), bring
	2			pronounce, toilet, palm tree
	4	playground, office, storeroom, hall/ headmaster, secretary		
3	1	uncle, cousin, aunt		
	2	businessman, housewife		
	4	building site, bakery		
4	3			terrible, light (adj.),
	5	photographer, butcher, fruitseller, bookseller, footballer		play, sell, walk
6	1	timetable, assembly		
	3			airport, arrive, museum, afternoon, tired, return, later, boat, temple
	4			decide, discuss
7	2			minute, cover, bag
	3			pass, ambulance, corner, lady
	4			report, another, order
8	1	float, sink / smell, taste, touch / mouth, eye, finger/ metal, plastic		
	2			experiment, edge, correct, heading, through, find, count, string, join, quiet, tight, instructions, follow, use, line up
	3			end, sharp, hold out
	4	sums, subtract, multiply by, divide by, equal		number, always
	5			elbow, history,
9	1			coat, ill
	2	wolf, tortoise		woods, keep, promise, kind, little, understand, lie down
	4			buffalo, leaves, thumb, scientist, late, bone, camera, blanket
	5			marry, own
10	1			value, miss, probably, tie, pretend
	2			ring, knock
11	1	apples, potato, soup, carrots, sugar, soup, mangoes		
	4	grocer, green-grocer, bank, post office		
12	1	pears, cabbages, plums/ kilo, pound		sorry, else
	2	oil, salt		
	3			shopper, cost, chocolate
13	1			compare, dinosaur
	3	size, weight/ hundred, thousand, million		chance, tiny, lizard
	5			check, useful, clean, easy
14	1			elementary, laugh, wild, journey, race, crawl, quickly
	2			lazy, cave, fox
	3		solve, problem	
	4			exactly, surprise, seconds, tap
15	1			wheel, expensive
16	1			fold, peel, polish, dish

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
17	1	countries / capitals / nationalities / languages		
	2	north, south, west, east		city, tower, clock, often, island
	4		dates, calendar	
	5			passport, departure, birth
18	1			sheep, already, collect, yet
	2			upon, enjoy, hill, bored, hurry, attack, save, believe, interested, lie
	5			boil, swimming pool, wake up, wave, reach, gate
19	1	cloth, leather, wool		
	3	sand, rocks	oil (petroleum), pipes, petrol, kerosene, oil refinery, tanks	formed, modern, world, lorry, company, land, coast, store, important
	5	gold, silver		
21	1	crocodile, ant / trunk, hump		
	2		length, metre	hide, method
	3	pythons, antelopes		swallow, information, horrible
	4			highway, fireman, brain, run away
22	1		news, newspaper	crash, against, championship, fire, start, get away
	2			study, foreigner
	3	backwards, forwards	university, professor	injured, escape, several, search, trained, captain, complete, ready, since, exciting, tonight, time machine
	5			mistake, gang, outside, metro station, headline, produce, cassette recorder
23	1			desert, learn, birthday party, cinema, plan, grow up, flash
	2		war, soldier	hour, stay, around, switch on
	3	hungry, thirsty		stomach, yawn
24	2			unless, wet, landed, strange, either, empty, yell, slip, adventure
25	1			melt, dropped, painter, terrify, invent, stamp, clear, silent, guides

Appendix 7.4: New Word Sets in Hello 4 [Preparatory Phase: Year 2]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
1	2			explain, guess, advertisement, sign, magazine, score, student, practice, look up, sometimes
	3		patient, medicine, examine	lot, peanuts, powder, habit, laboratory, athletics, freeze, dry
	4			whole, hard, regularly, topic
	5		balloon, air, wind, rise, blow	few, type, soil, , drop
2	1			steam, become
	2	cool, heat		
	3	condensation, evaporation		vapour, process, same, lake, together, full, support
	4			stove, loud, bang
3	3	tools, hammer, nails, drill, scissors, saw, ladder		reply, lend, roof
	4			clue, cap, straight, line
4	1			volcano, café, sail
	2	pilot, diver		shade, mini, dark, disappear, explode, shake
	3			lost, introduction, suddenly, flames, liquid
	4			remains, ocean, shape, usual
	5			post card, notice
6	1			electricity, able, sure
	2	active, passive / instruments, protractor, weighing machine, thermometer		angles, temperature, conversation
	4			blink, main, reason, accurate, amount, translate, control, everywhere, soon
7	4			greedy, wonder, more, husband, excited, jeweller
8	1		envelope, postcode, address	
	2	Mr., Mrs., miss		
	3			pen-friend, cycling, piano, age, dear
9	1			free time, glad, rough, busy, term, geography
	4	hobby, chess		activity, distance, scrap book, cut out
	5	shallow, deep		hate, daughter, blood, feel, spill, honest
11	1			forget, revise, lucky
	2	whale, octopus, shark		giant, amazing, towards, cheetah
	3			moustache, enough
12	2		toothache, dentist	sad, advice, scream
	4			submarine, far, special
13	1			engine, rest
	2			treasure, suit, torch, inside, marvellous, keep still, belong
	3			proud, mark, reward
	4			receive, sightseeing
14	1			describe, possible
	3	pay, earn	mine, coal, dig, ground, burn, chemicals	material, rope, tunnel, surface, belt, load, nowadays, lift (n.)
16	1	water-skiing, rowing, parachuting, hockey, motor racing, , karate, judo		
	2			opinion, least, popular
	3		world cup, competition, finals, rules, goal posts, score (v.)	scan, previous, take place, only
	4		Olympics, medals	famous, manager, spend, national,
17	2		irrigate, crops, roots, ditch, well (n.), windbreak	waste, improve, blow away
	5			percentage, income, valuable, product

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
18	1			healthy, fit
	3	proteins, carbohydrates, fats, vitamins		contain, energy, butter, protect, balance, rebuild
19	1			servant, nightingale, forest
	3			king, cage, toy, let, wind up
	4			dream, step out
21	5			bury, pirate, mountain, step
22	1	slim, well-built, fair-haired/ character, cheerful, polite		oval, extremely
23	2			lightning, first-aid box, crash landing, co-pilot
24	4			whisper, helicopter, rays, alive, rush, reflection

Appendix 7.5: New Word Sets in Hello 5 [Preparatory Phase: Year 3]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
1	1		Internet, network, world wide, connect	entertainment, secondary, moment, tour, wide, trade, communicate, spare, engineering, need
	2			allow, international
	3		defend, army	repeat, fact, coach, brave, effect, continue, rescue, rubbish, greet, boss
	4			file, state
2	1			courage, paralympic, congratulate, give up, compete, breathe, grab, break out
	2			trap, parents, star, put out
	3			permission, respond, borrow
	5			suitable, gap, sight, recover
3	1	picnic, trip		classmate, latest, change, fantastic
	4			development, system, government, goods, transport, abroad, overcrowded
4	1			interviewer, during, provide, worker, extend, cheap, pollution, reduce, certainly, worse, however, partner
				reclaim, project, meanwhile, indeed, pleasure
	3		viewers, record (v.), cameraman, editor, broadcast	include, expert, prepare, time capsule, message, succeed, container
	4			set, send, destroy, similar, contrast, although, passenger, chemistry
	5			sympathy, skills, pleased, fail, relative
5	2			application, flow, imagine, prefer
	3			principal, restaurant, furniture, film
6	1		aircraft, jumbo jet, flight, fuel, on board	super, comfortable, speed, narrow, powerful, serve, model, litre
	2			prediction, intention, event, decision
7	1			trouble, officer, watchman, faint, smash, recognise, sacked, voice, switch box, cash box, break into, turn on, arrest, instead
	4			advantage, lonely
8	1		necklace, diamond	clerk, career, afford, pretty, taxi, attend, worth, gasp
	2	intelligent, stupid		
9	1			sewing, successful, horror, imitation, replace, repay
	2			accounts, debt, bush, policy
11	1			mystery, compass, consist, area, airman, enter, missing
	3			publish, supplies, starve, settle, vanish, in charge
	4			agree, look like, invite, crazy, motorbike, pity, exchange
12	1	pizza, hamburger		recent, fortnight, overlook, tune
	3	accept, refuse		
13	1			village, cast
	2			quantity, excellent
	4			joke, beach, patient (adj.)

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
14	1	import, export		label, caravan, pack, massive, motorway, port, fresh, inland, cargo, present-day
	2			definitely, midnight
	5			textiles, economy, livestock, machinery
16	1		explorer, voyage	discover, mainland, historian, continent, tobacco, mummy, run out of, go on, dark-skinned
	4			storm, pilgrimage
17	1		jungle, undergrowth, waterfall, wildlife	thick, struggle, branch, used to, footpath, realise
	2			humid, fear, not mind
	4			location, landscape, central, climate, last (v.)
18	1	swing, slide	insect, bite	towel, suitcase, panic, stuffed, mud, roar, slammed, brakes, stare, ahead, tears, press, sake, button
	4			inform, direct
19	1			agriculture, create, shores, cubic metre, population, pumping station, nation, dam, undertake, close together, enormously
	2			parallel, concrete, delta, oasis
	3	negative, positive		
	4			grateful, argue

Appendix 7.6: New Word Sets in Hello 6 [Secondary Phase: Year 1]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
1	2		remote sensing, satellite, radar, NASA, astronauts / geologist, minerals	educate, director, condition, vast, penetrate, deposit, lunar, various, enable, climatic
	3		disease, drug, cure	politician, award, femto, laser
	4	beaker, microscope, Bunsen burner, tongs, scales	scorpion, sting	nasty, mile, human, article, admire, childhood
2	1		boot, buckles, bootmaker / sultan, excellency, palace	sigh, cheering, carriage, trembling, mutter, responsible, trust, punish, deliver
	4			require, degree, experience
	5	well-organised, efficient		
3	1			memory, introduce, interrupt, astonishing, cent, anyway
	3	lungs, intestines, skull, cells, neurones		complicated, incredible, pain, rate, senses, analyse, remove, properly, heartbeat
	5	rotten, delicious		blunt, smooth, sour
4	1	snarl, groan	whip, lashes	apartment, delighted, exclaim, coins, mad, owe, suppose, prison, corrupt
5	2			bright, truck, concert
6	1	shoulders, waist/ next to, in front of, by		broad, burglar
	3	conceited, serious, tolerant, pleasant, selfish		department, engaged, sales, bit, guitar, poetry
7	1			inspector, evidence, arrange, doorbell
	2		vehicles, exhaust, badly-maintained, lead, gases, harmful, rush hour, battery, diesel, traffic jam, petrol-powered, unleaded	brain damage, dissolve, natural, convert, manufacture, almost, estimate, particularly, cause, design
8	1		diagnose, surgeon, organs, x-ray	technology, lighthouse, bill, affect, revolution, century, average, expectancy, advance, knowledge, mankind, struck, fertiliser, involve, detail, spray, environment, overuse
8	2			desire, avoid, offer, love, regret, insecticides
	5			peninsula, remainder, centre
9	1			infectious, poison, prevent, swell, technique, vertically, stroke, chew, recommend, bacteria, germ
	2	bath, shower	sanitation, hygiene	tremendous, public, invisible, transfer, personal, breed, attract
	3			dilute, wipe, apply
	4			antiseptic, intend, treatment
	5		bleeding, dressing	equipped, minor, soaked
10	1			witness, fruit stall, occur, consider
	2			damaged, admit
11	1			complain, underground, coasted, architecture, prosperous, headquarters, skyscraper, harbour
	2			emperor, freedom, symbol, statue, nickname, united, steel, structure, jammed
	3			solution, sticker, surrounded
12	1		archaeologist, pharaohs, tomb	fiction, terrific, blocked, stairs, chamber, earring, fist, kid
	3			go off, hand round
	4		tent, camp	legal, septic, snorkelling

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
13	1	fin, fur, feathers, scales, backbone		nest, mammal
	2			moisture, prey, dunes, extremes, towering, snow, shifting, glacier, constant, common, ancestor, seal, gentle, domestic, well-suited, adapt, shiver, rarely
	3			warn, brother-in-law, blame, growl, descendant, grown-up, quizmaster
	4			loose, species, cub
14	1			shock, accent, suspicious-looking, investigate, identify, armed, grin, priceless
	2			disgraceful, annoyance, nuisance, ink, licence
	3			facilities, twinned, blind, get off, put on
15	1			oryx, dew, ban, lick
	2			litter, law
	3			notebook, waste paper
16	1			disguise, calmly, security officer, teenager, staff, handcuff, act, seem
	2	lounge, exit, entrance, information desk, check-in desk, departure lounge, arrivals		queue, x-ray machine
	3			announcement, mention
	5			corn, beard, artisan
17	1	travel agent, waiter, police officer / Africa, Europe, Middle East, Mediterranean		
	2		employer, organisation, customers, fax, e-mail, typing, qualifications, duties, colleagues, documents	request, course, confirm, booking, agency, contact, satisfaction, ambition, certificate
18	1			channels, club, orbit, launch
				navigation, signals, equator, object, gravity, manned, forecasting, relay, radar transmit, strengthen, pattern, cultural, local, media, illustrate, role, region, beam
	4			amusing, violence
19	1			community, rural, expedition, hike, instructor, disabled, challenge
	2			global, comment, based, scary, day-long
	3	widow, widower, orphan		except, waterproof , deaf
	4			keen, conservation, safari, cattle, outback
20	1			formal, poster, cruise

Appendix 7.7: New Word Sets in Hello 7 [Secondary Phase: Year 2]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
1	1	accountant, actress, architect, journalist, lawyer, receptionist, programmer		financial, records, research, software, bridge, civil, court, devise, cancer, lecture, honour, president, atom
	3			molecular, intensely, encouragement, citizen, occasion, portrait, postage, independent, institute, graduate, master, prize
	4		title, surname, occupation, marital status, single	
	5		cymbals, orchestra, percussion, violin	autobiography, vibration, lip-read
2	1	physics, biology		net, routine, muddle on, mood, pile up, limit, session, update, task, vital, overall
	3	world currencies		fascinated, cigarette, force, shell
3	1	increase, decrease / profit, loss	currency, invest, credit	
	2	banknote, cheque, credit card		barter, scarce, rust, stamped, guarantee, convenient, service, gradually, printed, protest, taxes, authority, originate
	3			debit, expiry, cardholder
	4		bank statement, account, balance (n.)	
4	1	joy, sorrow / poverty, wealth / cheat, deceive		wise, chief, hatred, beggar, kingdom, obvious, represent, puzzled, merchant, ugliness, elders, craftsman, package, tongue, generation, successor, cowrie shell
	2			relaxing, pointless, cartoon, variety
	4		commit, crime	review, improbable, well-loved
5	1			tapped, beef, gazelle, admiral, rank, navy, slight
6	1			level, atmosphere, pinpoint, originally, calculate, pine, windswept, flesh, victim, frenzy, bent, statement, bathyscape
	2			grip, drift, conqueror
7	1			seat, scuba diving
	2	boxing, soccer, wrestling, spear throwing		interfere, festival, individual, regard, highlight, spirit, eventually, pancratium, ruin, peace, insist, professional, ruling, committee, fair, college, abuse, performance, strip, amateurs, stadium, earthquake, landslide
	3			firm, art, awful
8	1			capture, tied, felucca, welfare, handler, upright, edges, straw, lined, rolling, dignified, devoted, flag, mayor, stable, sort, extraordinary, crowds, gaze, impress, dignity, impression, adore, hairstyle, mania, roughly, nervous, homesick
	2		itch, scratch	cash register, case, customs, platform, rail, glass case, tear
	3			approve, dismiss, bad-tempered, screen, storm out, hell, rude, quality, reasonable, pitch, referee, foul, bring up
	4			trainers, paradise, sunshine, superb, purpose
	5	plain, spotted, striped		

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
9	1			item, consequently, silkworm, decline, spices, establish, colony, luxury, frontier, rapidly, figure, volume, millennium, rout, downfall, open up, association
	2			undergraduate, seek, part-time, vacation, aid, proficiency, essential, overseas, co-operation, edition, tailor-made, brochure, theatre
	4			proficiency, abbreviation, on-site
	5			tandem, windmill, gunpowder, fireworks
11	1			fortress, legend, monument, border, remote, track, jumper, rent, furnished
	2		monastery, chapel commandment, Coptic, priest, oracle	antiquity, beneath, remain pulley, fortify, depression, bubbles, march, Berber, traditional, rugs
	3			allege, accommodation
12	1		gene, genetic engineering	nomadic, yield, modify, resistant, processed, consumer, fixed, primitive, ingredients, hunter-gatherer, virus
	2		sow, seeds	silt, isolate, characteristics, normal, ripen, opportunity, proportion, sweet potato, nature
	3	pesticide, herbicide, dermatitis, hepatitis		organic, dare
13	1	microprocessor, mouse, keyboard, floppy disk, cd-rom, circular, printer, screen	web, log on, surf, net	
	2			photosynthesis, link, benefit, delay, electronically
	4			indoors, drawback
14	1			grand, hire, industry, stretch, planeload, destination, cathedral, stonework, inhabitants, click, agent, leisure, golf, respect
	2			personnel, salary
	3	demolish, install, construct, flatten		
	5			wander, exotic
15	1			density, situated, major, organism, substance
	3			antibody, reproduce
16	1			insulated, slope, steeply, bricks, microphone, lock, available, conduct, preserve, central-heating
	2			bark, detached, isle, shed
	3			countryside, fabulous, view, valley, duplex, yard, phone booth, sidewalk, mail slot
	5	eagle, humming bird, woodpecker, cuckoo		ideal, igloo
17	1	sore throat, indigestion, infected wound, fever, insomnia	operation, anaesthetic, sterilise, transplant, contract, pulse, perform, artery, vein	
	2	circulation, bypass, bloodstream, valve		temporarily, era, disorder, brilliant, papyrus, carbon dioxide, waste matter
	4			function, carbolic, chop, hedge, wage, acid
	5			ward, appalling, founder

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
18	1			heritage, host, scenery, coral reefs, limestone, skeleton, magnificent, disastrous, anchor, dump, delicate, situation, decoration, souvenir, affair, fragile, resort, attached
	3	dial, hang up, get through, be engaged, hold, put through		accuse, switchboard, assistant, stumbling, lack
	4	chloroform, chlorine, chrome		muscles, sample
	5			outstanding, unique
19	1			emit, erupt, radiate, fossil, submerge, infrared, ash, bomb, breeze, misty
	2			absorb, double, glaciers, tackle, greenhouse
	5	draught, flood, blizzard, heatwave, hurricane, thunderstorm, tornado		unconscious, severe
20	1			embassy, oven, gateway, invade, courtyard, complexes, restriction, handicraft, absence, ecotourism

Appendix 7.8: New Word Sets in Hello 8 [Secondary Phase: Year 3]

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
1	2			decayed, layers, depend, turbines, generate, hydroelectric, release, blow up, dust (n.), reaction, turn into, billion, simple, recycled, reuse, can, aluminium, renewable
	3			landfill site, methane, sub-zero, mono-syllabic, bilingual, prefix, nuclear
	4			geothermal, molten, hot springs, plentiful, silt, bet, bait, base, chip, lap, recharge, solar-powered
2	1			articles, poetry, courageous, promoter, rights, society, dominate, well-known, sheikh, meetings, illiterate, persuade, pre-school, pen- name, take part, refer, birthplace, faculty, prophet, entitle, overcome, post (n.), scholar, concern, spread, truth, gallery, academic, prejudice, advocate, observer, lifetime, diplomat, argue for
	2			philosophy, elect, ministries, novel, member
	5		play, actors, playwright	matches (v.), verse, rather, survivor
3	1		dashboard, petrol gauge	telecommunications, branch, spokes, stock, weightless
	2			fault, take over, text, smart, one-way, park (v.), holiday, spinning, side effects, attractions, magical, gymnastics, technical, feature, space cruiser
	4			suggestion, refine, kangaroo
	5			prepay, tend, contract (n.)
4	1		astronomer, eclipse, solar	partial, deal, shadow, daytime, put off, forthcoming, enemy, battle, crew, unfortunately, superstition, pregnant, fasting, drive away, evil, marvel, universe, directly, frequently
6	1			reclamation, tough, capital, prune, bookkeeping, governorate, plot, official, low, couple, supervisor, determine, suburb, present (adj.), savings, frames, demand, employee, sign (v.)
	3	repair, fix		disappointed, hopeless
7	1			withstand, permanent, carved, cliff
	2			reign, illuminate, cataract, raise, superstructure, position, workforce, face (v.), fierce, raiding, watchtowers, barracks, graveyard, railway, drilling machine, perfect, diameter, underneath, excavated, antiques, knock down, congestion
	4			worship, abandon, showered, bullet, ruins (n.)
8	1	trunk, bark [tree]		mass, securely, damp, actually, ring, annual, borer, extract, varies, sequoia, date back
	2	rain forest, deciduous forest, coniferous forest		
	3			downwards, evergreen, select, stereo
	4		vegetation, manure, stake	
9	1	funnel, test tube, tripod		
	2			nourishment, water (v.), gain, logical, survival, tons, upset, chlorophyll
	4			hectares, tropical, clearance, lead (v.), soak up, skimmed, weaned, patched, dressed
	5			hydroponics, dramatically
10	1			fancy, marble, dome

Unit	Lesson	Paradigmatic Groupings	Syntagmatic Groupings	Unrelated Groupings
11	1	specialist, general practitioner, veterinary surgeon, midwife / injection, tablets		childbirth, general, treat, roll up, sleeve, assert, indicate
	2			chain, world-famous, set up, suffer, free, charge, airlines, donate, totally, unfamiliar, surroundings, aware, adaptable, affection
12	1	classical, folk, rap, rock, reggae, jazz	musician, improvisation	styles, hardly, pupil, range, stage, code, combination, speech, sense, softly, mixture, anywhere, appeal, audiences
	2			approximately, agreement, occasionally, propose, symphony
	3			exile, breadwinner, national anthem, working class, force (v.), ruled, uprising
	5		bagpipes, piper	spy, weapon, decree
13	1			patriotism, demonstration, feminist, tutor, ordinary, share, pride, bitter, disparately
	2			union, vote, influence, nun, homeless, granted, hand over, victory, threat
	3			disturbance, charged with
	4		airfield, aviation	
14	1		shuttle, spacecraft, asteroids	havoc, impact, glider, accelerate, reporter, series, equivalent, runway, mining, knock off, course, set off
	5			herd, wire, planetarium, chart, prehistoric, spectacular, sophisticated, tire
15	2			maintain, ridiculous
	3			draw up, convention, accessible
16	1			reed, laying, linen, logs, mill, ground (v.), roller, break down, pulp, bleached, fibres, drained, squeeze, compress, encyclopaedia, multimedia, reference, crush, ivory
	2			wrapped, cylinder, signature, trimmed, glued
	3		subject catalogue, shelves, reference section, check out, notes	psychological, resent
	5		craft, mould, papier mache	row, talcum powder, twist, excess, overlapping
17	1			procession, sculptures, commemorate, celebrate
	2	dawn, sunset		landmarks, liberty, timing, thoroughly, drums, townspeople, sacrifice, gatherings, remind, feast, let off
	4			loads, pudding, reptile, proceed
	5			dispute, district, rivalry, saddle, medieval, riderless
18	1	energetic, reliable, hard-working, fluent		candidates, minimum, personality, CV, medical representative, multi-national, appearance, possess, command, cater, urgently, marketing, enquiries, ensure, manner
	3			fed up, appointment
	4			courier, commands
	5			risk, shot (film), stunt, wig, punch
19	1		retire, promoted, self-employed	enrolled, short-term, information technology
	2			acquire, lifelong, necessary, conferencing, comfort, admitted, everyone
	3			cash, cell batteries, overnight, investment, download
	4			browse, web site, salesperson, valid
	5			pursue, miserable
20	1		chewing gum, chicle, rubbery	

Appendix 7.9: Teacher Interviews

Date: _____

Name: _____

School: _____

Experience: _____

Qualifications: _____

Training:

_____

_____

Introduction

I would like to find out about how vocabulary is taught in _____ schools and your opinions about the way it is presented in the textbooks.

1. How do you introduce new words to your students for the first time?

1.1 Why do you do it this way?

2. Do you organise the new words in the lesson in a certain way?

3. Do you present your students with extra new words that are not in there text?

4. If the word "plate" is a new word to be taught to the students, What other new words do you prefer to appear with this word in the lesson?

5. If the word "trousers" is a new word to be taught to the students, do you prefer if it is presented in the lesson with words such as "skirt", "blouse", and "sweater" OR with words such "changing room", "try on"?

5.1 Why?

6. Do you think presenting new words in the same lesson such as apple, orange, banana helps or hinders the learning of these words?

6.1 Why?

7. When the students learn new words that are closely similar in meaning (synonyms, opposites or words belonging to the same family group) in one lesson, do they confuse them afterwards?